THE OIL WEEKLY

ENGINEERING « NEWS » STATISTICS

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The Oil Man's Calendar

JUNE	
4	**Illinois-Indiana Petroleum Association, Sixth Annual Conference, Robinson, Illinois.**
6	**Oil Workers International Union, Houston, Texas.**
6–9	**American Society of Mechanical Engineers, National Oil & Gas Power Meeting, Dallas, Texas.**
16–18	**Pennsylvania Grade Crude Oil Assn., Wm. Penn Hotel, Pittsburgh, Pennsylvania.**
JULY	
27–28	**West Virginia Oil and Natural Gas Association, Charleston, West Virginia.**
SEPT.	
14–16	**National Petroleum Association, Atlantic City.**
27	**American Association of Petroleum Geologists, Mid-Year Meeting,**
Oct. 2	**El Paso, Texas.**
OCT.	
12–13	**Indiana Independent Petroleum Association, Hotel Severin, Indianapolis, Indiana.**
19–21	**Independent Petroleum Association of America, Tulsa, Oklahoma.**
27–29	**Annual Convention Texas Division, Mid-Continent Oil & Gas Assn., San Antonio, Texas.**
NOV.	
14–18	**American Petroleum Institute (Annual) Stevens Hotel, Chicago.**

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Note
THESE FEATURES

Oversize, flood-lubricated bearings.

•

Reinforced sills at anchor bolt foundations.

•

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•

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This Week's Panorama

ALTHOUGH fears of possible crude price reductions persist, there is considerably less justification for such cuts now than there was several weeks ago.

It is true that gasoline inventories are larger than desirable, being about 10 percent greater than at this time last year, while gasoline demand has dropped a little under last year's levels.

It is true also that progress in reducing the surplus of gasoline has been somewhat disappointing, and that gasoline prices, although relatively stable lately, are lower than a year ago.

Operations Under Strict Control

But it also is true that determined and at least partially successful efforts are being made to reduce excessive oil inventories.

These efforts involve exceptional curtailment of crude production and similar restriction of refinery operations, through which it is hoped current output of wells and plants will be below actual current market demand, making possible substantial withdrawals from storage.

Production allowables that have been put in effect for June are comparable with those of late May in their unusual degree of strictness. Most of the leading producing states are cooperating effectively in the program of exceptional curtailment.

In recent months numerous refineries have been closed down, by major as well as independent companies, and the past two weeks have brought additional plant shut-downs.

However, the restraint at the refineries has not been as effective as that at the wells.

Crude Stocks Decreasing Sharply

Evidence of the effectiveness of crude production curtailment has been furnished repeatedly in recent weeks by withdrawals from crude storage.

The latest official figure on crude stocks indicated a further decline of 1,601,000 barrels in United States inventories in the week ended May 21, when the total came down to 302,597,000 barrels. The crude stocks now are under the comparable levels of last year.

In the first three weeks of May the crude stocks declined about 4,500,000 barrels, having stood at 307,147,000 barrels at the beginning of the month.

Demand for Liquefied Gases Up

The sharp upward trend in sales of liquefied petroleum gases continued in 1937, the Bureau of Mines has reported, domestic demand having risen 33 percent higher than in the previous year to a total of 141,505,000 gallons.

Relative gains in all major uses of these gases were indicated. The sales of both domestic or "bottled gas" and internal combustion engine fuel increased around 36 percent in 1937.

Liquefied gas sales in 1937 for industrial fuel and chemical manufacturing were about 28 percent larger than in 1936, and the quantity delivered for gas manufacturing purposes was up 20 percent.

Exports of liquefied petroleum gases to foreign countries in 1937, however, were down to 1,879,000 gallons from 4,897,000 gallons the year before.

Oil Burner Shipments Low

Shipments of distillate oil burners continue to run lower this year than last year, although somewhat higher than in 1936.

The Department of Commerce has reported that distillate oil burner shipments in the first 4 months of 1938 aggregated 32,359 units, which was about one half the 65,022 units shipped in the similar period of 1937, but about 13 percent more than the 28,741 units shipped in the initial 4 months of 1936.

Similar shipments in April, 1938, amounted to 12,722 units, compared with 24,068 in April, 1937, and 7398 in April, 1936.

The California Oil Lands Dispute

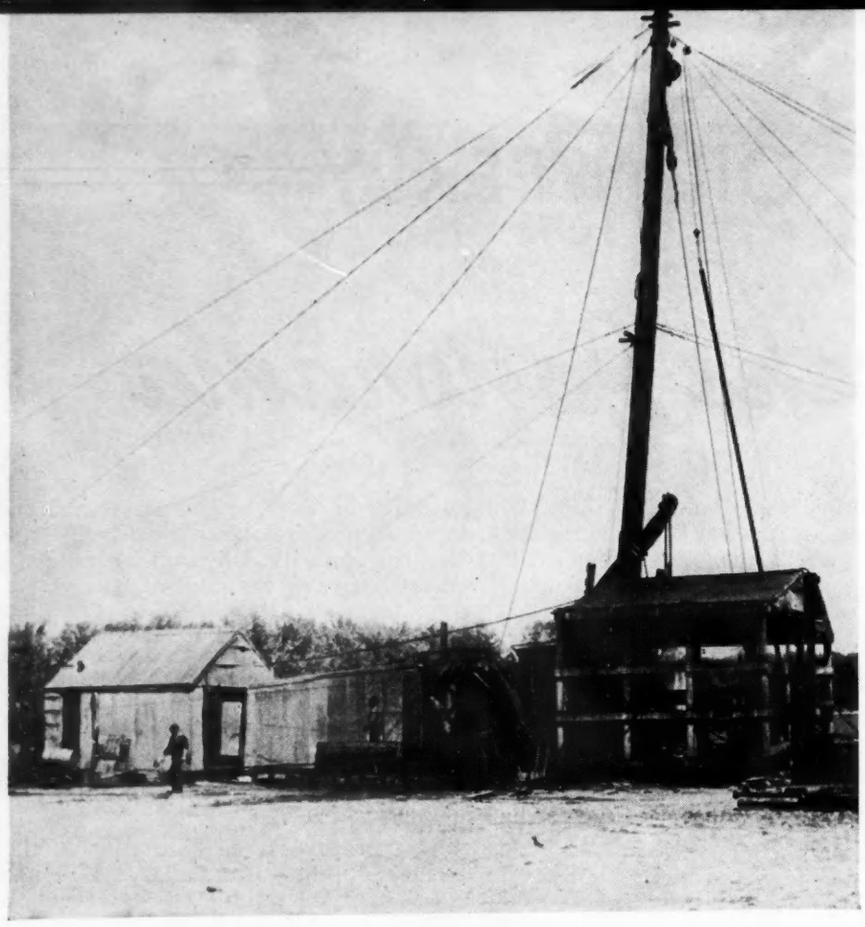
Federal control of undersea oil pools of California, sought in the Nye Senate resolution, would meet with various legal and technical obstacles. Aside from problems of title, it is pointed out that the coastal margin fields are already being drained by wells on land and that government ownership of the seaward portions of these structures would present problems of off-setting similar to those of Teapot Dome, Elk Hills, and Buena Vista Hills.

Forces lobbying against the bill include the states of California and Texas, the cities of Long Beach and Huntington Beach, and representatives of oil companies. California's revenue from its submarine oil is about $1,000,000 per year. It claims title to the undersea petroliferous areas through old Spanish royal grants which were recognized when the territory entered statehood. Passage of the bill would divert this income from the state to the federal treasury.

Officials of the city of Long Beach fear loss of possible income from the flush Wilmington field. The city received deed to certain areas, formerly owned by the state, when it agreed to make large-scale ocean-front improvements, although the state now claims that the deeds did not include the oil.

Texas entered the picture when Governor Allred telegraphed congressmen of that state asking them to vote against the bill. While proponents of the bill maintain that only the California reserves are sought, Texas officials fear that such seizure may be extended to other coast states.

Seizure of the submarine oil fields of California for



A new deep zone in the Monroe limestone and the first commercial production in the "Thumb" region of Michigan has been established by Norton & Kramer's Sharp 1, Akron township, Tuscola County. Bottomed at 3418 feet, 489 feet in the Monroe lime horizon, the well initialled 61 barrels, but which declined rather rapidly. The Tuscola well is the first in the state to produce from the Monroe where a substantial Dundee bed is present.

a naval petroleum reserve, as proposed by the Nye Senate resolution, would involve four major pools. All of these lie partly under the ocean and partly under the land. And all of them are being produced from their landward portions. Further, two, Elwood and Rincon fields are being produced from wells drilled from piers out in the water. A third, Huntington Beach field, is being drained from its subsea area through wells whip-stocked out from the shore. The flush Wilmington field has not yet been drilled in its seaward extension.

The Nye resolution, according to generally accepted interpretation, would not change the status of wells producing from these pools, other than to divert the royalties to the federal treasury. The three older fields have been developed toward the profitable limit in their seaward areas. In the case of Wilmington, California operators are wondering what steps the government will take, in case the Nye resolution passes, to protect the oil in the subsea portion of the anticline from drainage to wells on the land, where the structure is accepted as being higher.

Recurrence of off-setting problems that are history at Teapot Dome, Elk Hills, and Buena Vista Hills is foreseen by some. In this connection it is also recalled that according to a recent ruling by the Interior Department, no further permits are to be issued for drilling on federal lands within one mile of a naval petroleum reserve.

Technology

WHILE a number of excellent papers have been published on special applications of dynamometers, there has been little written on their everyday uses and value. Therefore, there has been need of an article of a textbook nature. That is exactly what Hallan N. Marsh and E. V. Watts presented before the American Petroleum Institute Mid-Year Meeting, and their work is reproduced in full in this issue.

Six major pipe line firms last year installed over 100 new cathodic protection units. While there were minor changes in well known types, only one entirely new type of unit made its appearance. The latter is described on page 28.

Market Digests

Outlook—Price structures promise to remain stable in coming weeks, through benefit of strict curtailment of crude oil production and the current moderate operations at refineries.

Crude Markets—Some talk of possible crude price cutting continues. But strict crude control, under relatively low allowables, has been causing withdrawals from crude storage, and prices appear safe at least for some time.

Refined Oil Markets—Generally steady. Gasoline demand is relatively good, with some refiners buying in the open market to supplement their own production, and with jobber and broker inquiries brisk.

More About Oil Shows

THE EDITORIAL appearing in the May 23 issue of THE OIL WEEKLY, entitled "Something to Think About" which dealt with the subject of oil expositions has brought to the editors of THE OIL WEEKLY more comment than we have ever received on any one subject. The comment has come from oil men and manufacturers alike, and with few exceptions comments were favorable.

In our editorial above referred to we simply pointed out the obvious fact that the manufacturers had such a heavy investment in equipment and displays at the International Petroleum Exposition, and that the investment in traveling expenses by the supply and equipment companies was so great that it could be sustained only if the industry, nationally and internationally, attend it, and the editorial closed with the statement that so far as THE OIL WEEKLY is concerned it would be agreeable to us to have one big oil industry exposition in Tulsa.

Among the numerous letters and comments received was only one from an exhibitor who expressed himself favorable to more than one exposition and this exhibitor added that insofar as he was concerned if there were a third exposition he would be glad to exhibit in it. On the other hand more than a hundred telephone calls, personal conversations and letters thoroughly endorsed the idea of one show.

Some Houston manufacturers stated that they agreed there should be only one show but felt that it should be held in Houston.

There has been considerable newspaper comment on both the editorial and the situation which provoked it. A columnist in a Dallas paper expressed the belief that oil shows generally were in danger of being well on the way to oblivion but naively added that possibly out of it might come a universal show at Dallas.

In Houston there has been some talk within the past week of permanent exposition buildings of sufficient magnitude to house a larger exposition than has been held in Houston previously.

THE OIL WEEKLY has no intention of taking up a crusade in favor of one show or in favor of any locality. We have always had the feeling that the oil industry is too large to become involved in Chamber of Commerce disputes. We have felt that the question of civic pride, whether it be in Houston or Tulsa, should have no part in the question of petroleum expositions.

So far as we know there has been no effort made on the part of the International Petroleum Exposition officials to contact officials of the Oil-World Exposition, Inc., of Houston in re the matter of only one show.

The members of the Oil-World Exposition will meet at the Rice Hotel in Houston at noon June 7 to elect officers and lay plans for the 1939 Exposition announced for Houston. So far as THE OIL WEEKLY is informed there is no plan under way to void the Houston Oil Show.

THE OIL WEEKLY has always considered that it is a forum for discussion of problems affecting the oil industry and the equipment industry as well. Our columns are open for the publication of letters or comment on this situation. The only thing we ask is that sectional feelings be kept out of them and that they be of such length as not to use unreasonable space.

Oil Affected by

By L. J. LOGAN

ECONOMIC conditions outside the United States no longer are the source of comfort they were some months ago, when it was felt that the American recession was a local affair and therefore not so disturbing.

More and more, it appears that the whole world is confronted with deep-seated economic difficulties.

Commodity Prices Declining

The most obvious ill omen is the persistent decline of commodity prices in the world markets. In the aggregate, these prices are around the bottom levels of the year and lowest since the autumn of 1933. Nearly all commodities have been adversely affected, including cotton, corn, wheat, rubber, sugar, cocoa, and so forth, although prices of petroleum and petroleum products have held up exceptionally well.

These declines of commodity prices are especially significant, as they represent both effect and cause of economic maladjustments and disorders. The declines are the result of disturbed conditions in so far as they have grown out of technological progress in production and the attendant flooding of markets, growing unemployment, and upsetting of the lives and occupations of millions of people.

The commodity price declines, in turn, are the cause for new maladjustments, in so far as they bear down unequally on different producers, are out of proportion to any declines in wages or prices of manufactured goods, make the producer of raw materials unable to buy finished products, and retard general business activity.

Some economists believe, in fact, that both the 1929-1932 depression and the 1937-1938 recession were largely caused by or at least greatly accentuated by commodity price declines and the associated revolutionary changes in economic conditions, particularly the changes arising out of the technological progress in production. Among these economists, moreover, some assert that the revolutionary developments have not yet run their course; that some commodity prices may be destined to go ultimately to still lower levels before becoming stabilized; that more of the far-reaching readjustments of people's lives and occupations are in store.

British Situation

Great Britain was among the first countries outside the United States to falter in business activity, and lately the situation there has become increasingly less promising. Unemployment is large, inventories are excessive, further curtailment of industrial production is threatened, the debt burden is heavy, securities prices have been weak, rail traffic figures are bearish, imports and exports are running lower than a year previously for the first time since the commencement of the recovery movement in 1932. The signs are numerous that the country is confronted with a business slump very similar to that in the United States.

(Great Britain some weeks ago raised income taxes to 27½ percent, to help balance the budget, which is the largest in peace time history, because of contemplated heavy armament expenditures. . . . Gasoline now costs the consumer about 39 cents a gallon, the tax having been raised recently from 16 to 18 cents.)

Canada Feels U. S. Slump

Next-door neighbor to the United States, Canada has been appreciably affected by the American recession. The country experienced late in 1937 a downturn in general industrial and business activity, from which there has not been any recovery except of seasonal nature, although recent months have brought sidewise trends and at least temporarily stabilized conditions.

Mexico is pursuing a political course that is surrounded by grave dangers, having precipitated a national economic crisis, affecting all industries, businesses, and people, by expropriating the foreign-owned oil properties. It is a safe guess that Mexico will be retarded economically for years to come, in consequence of the expropriation decree, regardless of the outcome of the litigation between the government and the oil companies.

Furthermore, the countries of South America likely will suffer indirectly from the oil seizure in Mexico. Foreign property owners in Venezuela and other South American countries are fearful of a possible spread of the expropriation idea to those countries, and new capital is frightened away.

Japan Has Troubles

Japan is encountering economic as well as military troubles in the unexpectedly difficult war against China. The Japanese national debt has been rapidly mounting in recent years, and is now equivalent to the annual national income, as heavy government expenditures have far exceeded income from taxes. Japan's situation is especially difficult, moreover, because numerous important raw materials must be purchased from other countries. In recent months there have been some indications that the Japanese credit and exchange position already may have become seriously strained, one of these indications being the fact that Japan apparently is beginning to curtail purchases of petroleum from the United States.

France is heavily burdened with debt, and for years the government has been spending more than its income. Consequently, the country is on a financial foundation of sand.

Where Dictators Rule

Concerning the financial positions of the dictator countries of Europe,

World Situation

Associate Editor

only half-truths are published, the burdensome actual national debts being only partially admitted, and government credit being supported artificially by economic restraints, as, for example, the Nazi limits on prices. Nevertheless, the world is not deluded, and it rates as poor the credit of both Germany and Italy; and it becomes increasingly difficult for the dictators to buy from other countries, in keeping their war machines going.

Finally, the affluent United States is on the same dangerous path of spending far beyond its means. In a few short years the national debt has doubled, and it now is equivalent to half a good year's national income, with no end of spending with borrowed money in sight.

Bankruptcies Threatened

Nearly the whole world, therefore, apparently is drifting toward the cataract of bankruptcy and inevitable inflation, which has the power to smash currencies and the governments they represent and thereby to disrupt whole economic systems and the lives of men.

It is true that this drifting has been under way, on a world-wide scale, for some years, and that no catastrophe has occurred yet. But the cataract yet waits ominously, and now it is not so far away as it was.

Thus the world economy now is complicated and hampered not only by the far-reaching, destiny-shaping changes arising out of the technological developments of the scientific age, but also by the modern widespread willingness to run governments on the spendthrift basis, which may actually reflect a deterioration of moral fibre among nations.

Background for Oil Clouded

The petroleum industry's outlook necessarily must be viewed against this background of clouded world affairs, and any optimism as to the oil industry prospects must be tempered with a recognition of the world influences.

For any economic trouble in any country is a cloud on the oil horizon. Thus if any country, for any reason, suffers impairment of its ability to buy foreign goods, it curtails purchases of American oil, and furthermore, it reduces purchases of American cotton and cotton goods, and the American cotton growers and textile workers consequently are less able to buy petroleum products. Economic laws recognize no international boundaries or demarcations between industries.

World Trends Significant

As indicated in the beginning, countries outside the United States have continued to experience relatively good business, in the face of the American slump.

Consequently, in 1938, the United States has had good export business, which has materially cushioned the sharp decline in domestic business. The automobile industry and the petroleum industry are among those that have experienced this combination of better export than domestic business trends.

In the first quarter of 1938, exports of crude oil, totaling 17,402,000 barrels, were 64.6 percent larger than in the corresponding period last year; while exports of refined products, aggregating 25,797,000 barrels, were up 18.9 percent.

So far, therefore, the maintenance of relatively active trade in other countries has been a definite stabilizing influence for United States business. And the welfare of the petroleum industry henceforth will depend in considerable measure on the world trends in business.

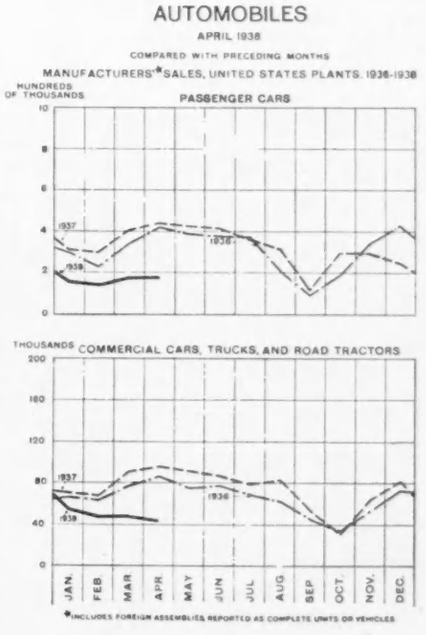
Automobile Sales at Low Levels

Figures on sales of automobiles, trucks, and tractors continue to involve adverse implications for the petroleum industry. The sales are running materially lower than in either 1937 or 1936, as shown by the accompanying chart.

United States manufacturers in the first 4 months of 1938 sold 838,191 vehicles, according to the Bureau of the Census, which was less than one-half the 1,774,067 units sold in the similar period of 1937 and not much more than one-half the 1,575,080 vehicles sold in the initial 4 months of 1936.

Sales in April, 1938, totaled 219,314 vehicles, as compared with 536,150 in April, 1937, and 502,674 in April, 1936.

It is indicated currently that total automobile production in the United States in 1938 will be at least 50 percent lower than in 1937, when about 5,000,000 vehicles were made, or nearly as many as in the peak year 1929. The indicated automobile output of 1938 would be almost as low as that in 1933.



Duval County Key Source of Reserves

By EARL S. POST, Staff Writer

WITH more than a quarter of a billion barrels of crude uncovered and less than 40,000,000 barrels recovered, Duval County is one of South Texas' key sources of reserves. This production is coming from 41,560 acres proven for oil and gas, in more than a score of fields.

Development of the bulk of these reserves has been over a period of 10 years, during which time major companies and independents alike have carried on a rather aggressive wildcatting program. With a few exceptions, this wildcatting program has been limited to shallower zones, leaving lower levels for future exploration. Only two wells have been carried to below 7000 feet: Humble Oil & Refining Company's Kohler 50, drilled to 7723 feet, in the Carrizo, in 1931, and Benedum and Trees' Clara Driscoll Sevier 1, completed in 1936 at 7103 feet in the Yegua-Cook Mountain.

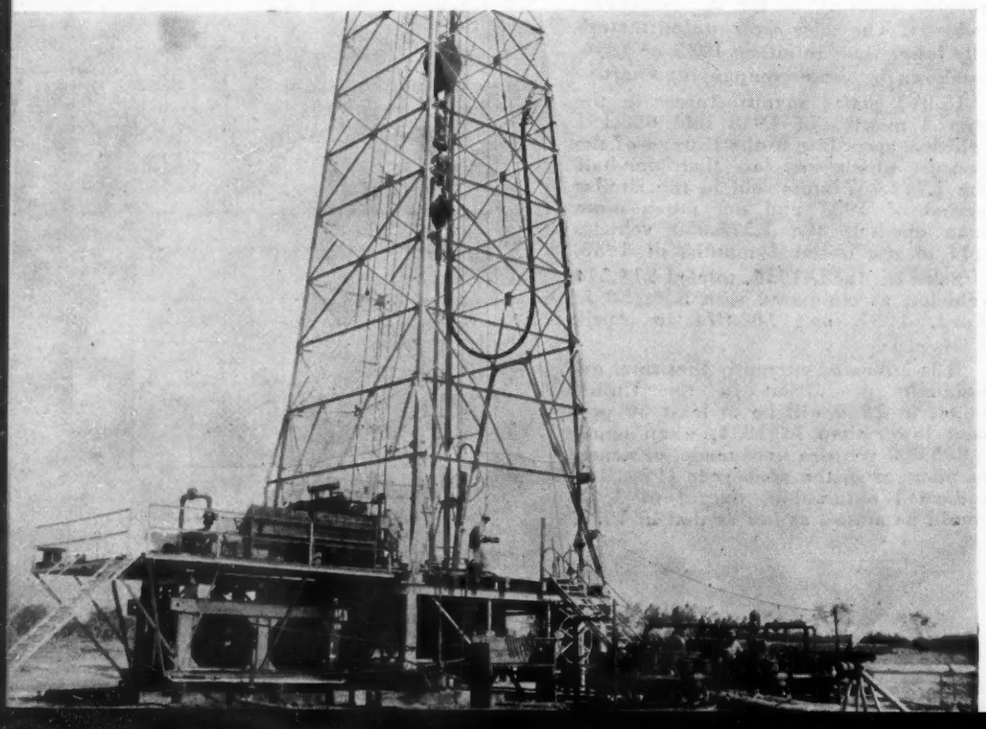
Mostly Shallow So Far

Duval County's development program mainly has been centered around production in the 2000-3000-foot bracket, where low gravity crude is obtained from Jackson sands. Relatively high recoveries, inexpensive drilling, reasonable lifting costs, etc., tend to make this trend a paradise for independent operators. Major companies, however, hold the greater portion of the county's producing acreage.

This trend first became an oil "producing" district about three quarters of a century ago. Small dug wells at Piedras Pintas, or Noleda, provided ranchers and wagon trains with a small amount of thick, paste-like crude. September 10, 1905, very shallow cap-rock production was developed on this salt dome. The small importance of the field is indicated by the fact that, including new discoveries of deeper flank sands, the area has recovered only 149,611 barrels of crude. The pool extends north and west from Benavides, present boom town for a development program less than two miles to the south where the Sweden pools are in process of development. Oddly, the county's oldest pool is hardly farther than just across the fence from its newest and possibly its largest field.

Real Start in 1924

It was not until 1924 that the county received an appreciable amount of exploration, that coming after the discoveries of Driscoll and Cole pools. The latter is a border line field, its main oil production being across the Webb County line. Kohler followed in 1926, then Government Wells in 1928. None of these discoveries amounted to important oil producers until after 1930. New and deeper sands were uncovered in Driscoll, Cole, Kohler and Government



Frank J. Gravis' test on the Parr tract, North Sweden field, Duval County. The district was discovered by Gravis in 1937.

Wells. It was the deeper sand lenses in the Government Wells group that put Duval County definitely into the major producing class.

Duval County's production is divided into two classifications. The low gravity crude, which is about 80 percent of the reserve total, ranges from 20 to 28 degrees and is highly desirable. It is sweet and contains elements which make it excellent burning oil, diesel fuel and lubricating stock. One pipe line company takes Loma Novia crude direct from its pipe line to be used to fuel the diesel engines pumping the crude. Some of the crude in this classification contains high anti-knock qualities and when cracked is blended with other gasolines. Another crude in the low gravity bracket is high in naphtha content, several thousand barrels daily being processed into Painters' naphtha.

Light Oil New

High gravity production is comparatively new to Duval County. Except for a small amount in the the Piedras Pintas, Driscoll and Cole-O'Hern pools, it was not until the opening of North Sweden and Sweden fields last year that Duval County was considered a high gravity crude reserve. Now, these two new pools are producing oil ranging from 43 to 59 gravity.

The county has 24 fields, not counting two with part of their production in Webb County. Computing the reserves in the Duval County portion of the two border line fields, plus the reserves in the other fields, it is shown that this county has 29,590 acres of oil production and 11,970 acres of gas production.

193,064,731 Barrels Reserve

The total expected recovery from already developed acreage is expected to total 252,389,383 barrels, of which only 39,324,652 barrels have been recovered. This leaves a reserve of 193,064,731 barrels. On February 1, there were 2443 wells in the oil producing column with the daily average output being 56,562 barrels.

Government Wells Largest

Duval County's largest field is Government Wells, which has an expected ultimate recovery of 81,485,000 barrels, of which 34,058,555 barrels had been recovered to January 1, 1938. Next in size is Loma Novia, producing from a separate sand lens on the east side of the Government Wells structure. This area has an expected recovery of 65,120,000 barrels, of which 11,826,129 barrels had been recovered to January 1, 1938. These two pools have a combined area of 14,980 acres and 1451 producing wells. Production comes from depths ranging from 2200 to 2850 feet, crude being in the lower gravity bracket.

Another pool rapidly becoming a factor in Duval County reserves is the North Sweden area. It is a multiple sand area comprising nine separate sand levels. Its 1540 acres already proved have an ultimate recovery calculated at 20,395,000 barrels of an average of 13,250 barrels per acre. This is the highest per acre average for any field in Duval County. The field is far from being defined and ultimately may be placed in the 50,000,000-barrel bracket.

The accompanying table clearly illustrates the reserve situation in Duval county.

Many Types of Structures

Of particular interest is variety of types of structures in the area under discussion. They play an important part in the future possibilities of the territory. Palangana and Piedras Pintas are salt domes and have cap rock as well as flank production. North Sweden and Sweden are faulted and folded structures, indicated on the seismograph picture as deep seated salt domes. No salt material, however, has been encountered in drilling operations. SR&C, Charamousca, Lopez, Colmena, Rancho Solo, El Mezquite, Loma Novia, Eagle Hill, Ignacio, Hoffman, Peters, Loma Vista, Piedra Lumbre and Labbe show a material lack of structural relief; there is some faulting, minor folding. Production in most cases is directly attributed to lensing. Seven Sisters is materially affected by faulting and has a small amount of folding. Government Wells has a closure to the northwest, while Kohler and Cole are irregular shaped elongated domes. Driscoll, likewise, has a folded type of structure. In every case, however, sand lensing is a major factor in the trapping of the crude oil.

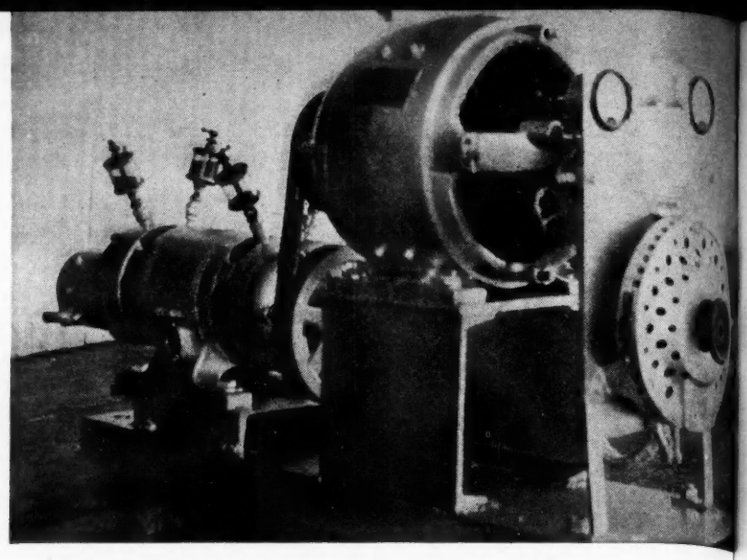
As will be noted from these lensing structures, additional sand bodies of Jackson age are likely to be found up or down dip from present fields. Under favorable conditions these should prove productive. As for deeper sands, it is not likely that these fields with minor or no structural relief will provide desirable places in which to drill. On the other hand, there are a number of areas of sufficient structural promise to attract deeper exploration. These should prove interesting in sands down to the Cretaceous age.

DUVAL COUNTY RESERVES

NAME	Date Discovered	Acres in Oil	Acres in Gas	Expected per Acre Recovery	Expected Recovery For Field	Recovered to January 1, 1938	Remaining Recovery	Average Gravity
Charomousca	1935	120	....	4,300	516,000	72,360	443,640	21
Colmeno	1934	210	350	5,800	1,218,000	146,110	1,071,890	20.5
Cole*	1924	3,520	8,980	9,400	35,550,000	6,550,047	23,999,553	22-41.7
Driscoll	1924	380	300	8,500	3,230,000	891,513	2,338,489	22.5-33.6
Eagle Hill	1933	320	300	3,725	1,192,000	624,478	467,522	22
El Mesquite	1935	Reserve included in Cole Field						
Government Wells	1928	7,580	600	10,750	81,485,000	34,058,555	47,426,445	21.5-26
Hoffman	1933	920	300	7,800	7,176,000	939,120	6,236,880	23-26
Ignacio	1933	10	10	1,342	13,420	13,420	.....	22
Kohler	1926	360	5,000	2,750	990,000	517,967	472,033	21.5-22.6
Labbe	1934	180	550	7,800	1,384,000	74,765	1,309,235	27
Loma Novia	1934	7,400	600	8,800	65,120,000	11,826,129	53,293,871	22-27
Loma Vista	1936	110	10	814	8,138	8,138	.....	26
Lundell	1937	80	40	Reserve included in Government Wells Field				21
Lopez*	1935	3,350	250	11,000	36,850,000	4,502,865	32,347,135	22
North Sweden	1937	1,540	120	13,250	20,395,000	787,525	19,607,475	43-53
Palangana	1928	40	....	300	12,000	10,250	1,750	16
Pena	1933	....	10	.....	.....	.....	.....	Gas
Peters	1933	120	1,800	6,000	720,000	87,627	632,373	21-23.6
Piedre Lumbre	1935	580	120	8,000	4,640,000	514,667	4,125,333	20-23.5
Piedras Pintas	1905	120	....	1,400	168,000	149,611	18,389	13-54
Rancho Solo	1935	80	280	Reserve included in Kohler Field				21
South Hoffman	1937	10	....	124	1,240	1,240	.....	22.1
S. R. C.	1930	80	....	3,640	291,085	291,085	.....	20.8
Sweden	1937	120	80	7,225	867,000	65,035	801,965	58
Thomas Lockhart	1937	50	....	4,000	200,000	14,125	185,875	56

* Lopez and Cole Fields have only a portion of production in Duval County.

Cathodic Protection Use Grows



Houston Pipe Line Company's rotary engine driven generator cathodic unit in use at Hoskins Mound.

By DENIS S. SNEIGR

WITH over one hundred new units installed by six major companies during the past year, the cathodic protection of pipe lines kept pace with other engineering branches of the petroleum industry, and established itself more firmly as an accepted means of combating corrosion. And while there were but minor changes in the four well-known types of cathodic protection units, an entirely new type of unit made its appearance in a Houston Pipe Line Company installation at Hoskins Mound, Texas.

A New Unit

This new unit consists of a 2.4-kilowatt, 1750-revolutions per minute, 60-amperes, 40-volt generator operated by a rotary engine which is driven by the pressure drop at a large regulator in a gas line. When this unit first was installed, the generator was driven direct by a shaft from the rotary engine. However, this arrangement led to trouble with the generator as a result of vibration from the engine.

After some experimentation, the generator was removed from the base on which the entire unit was mounted, elevated as shown in the photograph, and the shaft drive replaced by a belt drive. With this slight change in the design, this unit has been running continuously for the past eight months and the only cost has been one quart of oil a month for lubrication. Undoubtedly, this new unit is the most economical yet devised for cathodic protection. However, its field of application is restricted rigidly to such points in a gas line where a large pressure drop is present.

Besides this one rotary engine unit, Houston Pipe Line Company installed four gas engine units, one rectifying set and six wind mills.

United Gas Pipe Line Company made a total of 63 installations consisting of 16 rectifying sets, 26 wind mills, 20 gas engines, and one motor generator set.

The Texas Pipe Line Company installed eight wind mills and five motor generators and one rectifying unit.

Shell Pipe Line Company used the rectifying set exclusively, installing 12 such units.

Humble Pipe Line Company installed five wind mills.

TABLE 1
Cathodic Units Installed by Six Major Companies

COMPANY	Wind-Mill	Recti-fying	Gas Engine	Motor Generator	Total
Houston	6	1	5	0	12
United	26	16	20	1	63
Texas	8	1	0	5	14
Shell	0	12	0	0	12
Humble	5	0	0	0	5
Gulf	0	12	0	0	12
Total	45	42	25	6	118

A Multiple Installation

The Pipe Line Division of Gulf Refining Company made what may be termed one installation. However, this installation consists of 12 rectifying units. This installation is in Jefferson County, Texas, between Port Arthur and El Vista Station and involves a section two and three quarters miles long made up of seven parallel pipe lines, thus totaling little better than 19 miles of pipe line.

At this particular spot the lines run through a salt marsh, and corrosion has been so intensive that the Gulf has been obliged to completely recondition all the pipe in this section about once every five years.

The four 10-inch and the three 8-inch lines in this section are protected by 12 rectifying units spaced at quarter mile intervals along the section. At the point where each unit delivers current, the seven lines are bonded together by a piece of 2-inch pipe welded to the tops of the lines. These seven lines cover a space about 25 feet in width.

The ground beds for these units consist of 200-foot sections of 6-inch pipe laid 10 feet apart and paralleling each other and the pipe lines. The two ground bed pipes are bonded together at each end by strap iron welded in place. These ground beds are buried about a yard deep and about 100 feet from the nearest pipe line.

Of these 12 rectifying units in this section, 11 of them are set to deliver 100 amperes at 10 volts while the twelfth set—an end unit—delivers 50 amperes.

Table 1 summarizes the number of units installed by the six major companies listed above.

PRACTICAL

Dynamometer

TESTS

By H. N. MARSH
and
E. V. WATTS
General Petroleum Corp. of California,
Los Angeles, Calif.

WHILE dynamometers have been used for a number of years and excellent papers have been published on special applications, little has been published concerning everyday uses and value. This paper is of textbook nature—showing the place of the dynamometer in well-testing problems, listing the principal types, presenting data on the accuracy of the hydraulic type, outlining uses of dynamometer data, and describing field and office procedure. Examples are included, and beneficial results cited.

This paper was presented at Eighth Mid-Year Meeting, American Petroleum Institute, Wichita, Kansas, May 24, 1938.

The statements and opinions expressed herein are those of the authors, and should not be construed as an official action or opinion of the Institute, nor of this publication.

RECORDING dynamometers were first used for testing the performance of rod-operated pumping oil wells in 1923; and, although the instruments have been generally so used since 1929, little has been published on the practical aspects of such tests. Excellent papers have been written on special applications of dynamometers, so that the impression may have been created that they are primarily for occasional use by the research worker. On the other hand, some companies have found the information afforded by the instrument so important in maintaining proper operation of wells that use of the instrument is a routine matter.

Place of the Dynamometer in the Test Program

Throughout the the productive life of any oil well, it is desirable that up-to-date information be available on: 1, well performance; and, 2, equipment performance. By the former is meant "those sub-surface characteristics . . . which are divorced from any consideration of the method by which the oil is brought to the surface."[1] Equipment performance refers to the characteristics of the particular installation used for lifting the fluid. In rod-operated pumping wells, both of these performances may be computed directly from data obtained by the instruments especially built for the purpose:[2]

1. *Subsurface pressure recorder or fluid-level recorder*: *Well performance*: datum pressure productivity index, potential, etc.
2. *Polished-rod dynamometer:* Surface equipment performance: loads, torque, efficiencies, etc.
3. *Pump dynagraph*:* Subsurface equipment performance: plunger stroke, conditions at pump, etc.

Regardless of the desirability of such comprehensive information, the time required to run all three types of instruments makes costs seriously objectionable. It is ordinarily necessary to limit the test program to the procurement of data which are readily obtainable and most essential to a study of the individual well. If maximum production efficiency is to be secured, then some knowledge must be available on surface conditions. Toward this end the dynamometer is indispensable. Equally important, however, is the fact that the dynamometer can be used to estimate the nature of the subsurface conditions by unique effects which may be observed at the polished rod. Three to five accurate and complete tests can be made easily in one day. Therefore, because it is the least expensive to run and because the data it provides are broadest in scope, the dynamometer is logically the key instrument in the testing program.

Far from being a cure-all, the dynamometer does not give results which are always conclusive. Further tests with the other instruments are not to be discouraged. Such supplementary study may be centered on a problem well, or used as a periodic check on deductions from surface data.

Types of Polished-Rod Dynamometers

The dynamometer is essentially a device for determining the load on the polished rod as a function of polished-rod position. There are two general forms: 1, the strain gage type, with several modifications; and, 2, the diaphragm hydraulic type. Although the latter is the only one with which the authors have had much experience, most of the paper is equally applicable to both types.

Diaphragm Hydraulic Type

The diaphragm hydraulic type consists chiefly of two parts: the transformer unit for converting the polished-rod load into pressure, and the recorder for registering this pressure. As shown in Figures 1, 2, and 3, the transformer unit is placed on top of the regular polished-rod clamp. A second clamp, tightened above the unit, transmits the load through the

* The words "dynamometer," and "dynagraph" are currently used interchangeably. Throughout this paper "dynamometer" will refer to the surface instrument; "dynagraph," to the subsurface instrument.

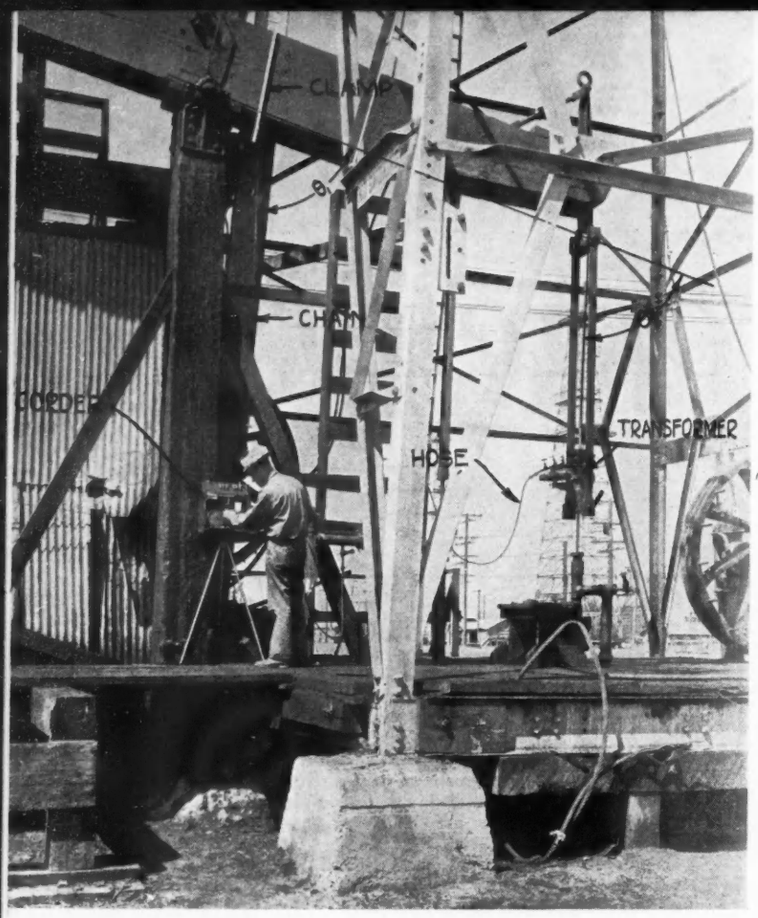


FIGURE 1
Dynamometer Installation.

unit to the hanger when the lower clamp is released. The unit itself is composed of two beams pivoted at one end, with a diaphragm mechanism between them at the other end, whereby a constant portion of the instantaneous polished-rod load is converted into a pressure which may be transmitted to the recorder through a flexible hose. The recorder is essentially a steam-engine indicator, motion of the drum being obtained by clamping a chain to the walking beam near the center bearing.

Accuracy of Hydraulic Dynamometer

Intrinsically, the hydraulic dynamometer has an accuracy sufficient for all practical purposes. Friction in moving parts is small, as shown by the fact that little hysteresis is observed in calibrating even the weakest indicator spring. In Figure 4 points lie on a straight line within plus or minus 1 percent of the full-scale deflection. Inasmuch as the load is applied perpendicularly to the diaphragm, this calibration is independent of the volume of fluid in the transformer, up to the point at which the diaphragm takes up its slack.

Error in the recorder itself probably does not exceed 2 or 3 percent[3] at even the highest pumping speeds, inasmuch as this device is primarily designed for recording pressure variations in engines operating up to 350 r.p.m. It has been found, however, that the loads registered by the recorder lag behind the polished-rod load depending on the type of connecting hose used. The magnitude of the lag, of course, varies inversely as the speed of sound (pressure waves) through the water in the hose which, in turn, is a function of the material of which the hose is constructed. If a rubber tube is used, this velocity is small—resulting in an appreciable lag. On the other hand, copper tubing gives good results, due to the fact that the speed of sound is approximately 3000 feet per second. If the tube is not more than 20 feet long, then the lag is less than 1/150 of a second. However, the copper breaks easily unless protected with welder's rubber hose. Flexible steel tubing, which is generally used in preference, gives long life and equally satisfactory results.

Conclusions concerning lag are based on tests in which the recorder was mounted directly upon the transformer and used on a well pounding fluid, thereby creating sharp impulses. Tubes of the various materials and of the same length that would be used to the normal location of the indicator were looped from the diaphragm to the indicator with valves arranged so that successive cycles could be recorded on the same card either directly to the indicator or through the various kinds of hose. Impulses traveling through the metal tubes arrived essentially at the same time as those traveling direct, while those traveling through rubber tube arrived appreciably later.

Like any other instrument used for reasonably-accurate measurements, the dynamometer must be handled intelligently. A few simple precautions, therefore, should be observed to eliminate errors:

1. The transformer must be nearly level to avoid eccentric loading.

2. All air should be bled from the hose and dia-

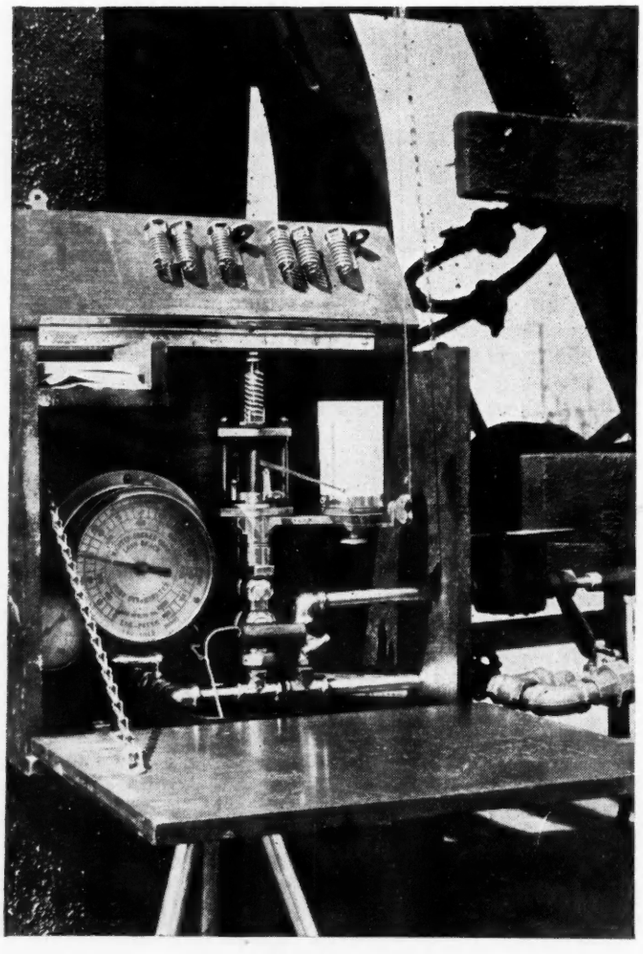


FIGURE 3
The Recorder.

phragm unit in order that the pressure impulses will not be cushioned.

3. The unit should be filled with sufficient water to keep slack in the diaphragm.

4. The bottom clamp should be completely free of the rod when released, to prevent a portion of the load being shunted around the transformer. (A little gasoline and a few hammer blows usually eliminate sticking.)

5. The point of attachment of the chain used to reciprocate the drum should be so selected that a card at least 3 inches long is obtained. Also, angles θ_1 and θ_2 should be equal, as shown in Figures 1, 2, and 3. If the recorder is placed so that the chain is vertical, this point will fall on a line joining the center bearing and the stirrup bearing. In case the beam has a horsehead and swings through an angle greater than about 30 degrees, it is desirable that a miniature horsehead likewise be provided for the chain.

Uses of Dynamometer Data

Before field procedure is discussed, it may be well to consider in more detail what can be learned from the dynamometer test. As has already been suggested, the information can be divided into two parts: 1, that which concerns the performance of

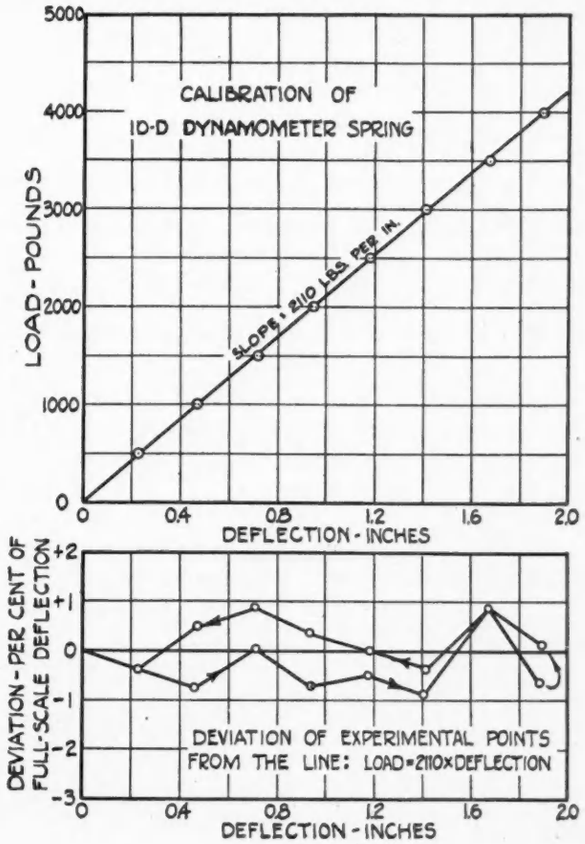


FIGURE 4

equipment; and, 2, that which indicates subsurface conditions by the effects observable at the polished rod. The first category includes what may be called for convenience "definite results," as they are obtained through comparatively simple calculations—with little occasion for elaborate theory or difference of opinion. The second includes equally important items; but, as more judgment and experience are involved, they will be termed the "inferred results."

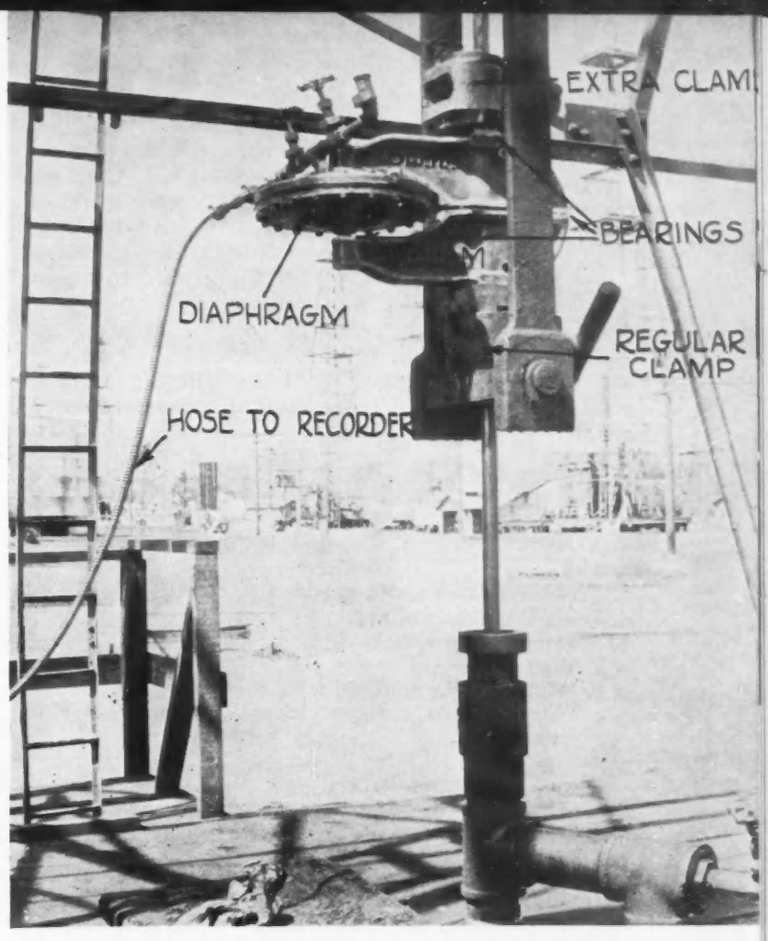


FIGURE 2
The Transformer.

The following can be readily computed from the data and, hence, constitute "definite results":

1. *Maximum load,* of obvious significance with respect to sucker rods and pumping machine.

2. *Range of load,* of significance with respect to sucker-rod failures and beam failures. Second only in importance to maximum load.

3. *Number of applications of load per cycle:* Some cases of impact loads are so severe that there may be several peak loads comparable with the maximum, so that for each cycle the rods and pumping machinery are subjected to several severe loads.

4. *Minimum load* indicates whether increased speed would cause the beam to get ahead of its load.

5. *Horsepower at polished rod:* With other readily-available data, this permits calculation of the two following quantities.

6. *Above-ground power efficiency,* which is polished-rod horsepower divided by horsepower at prime mover.

7. *Below-ground power efficiency,* which equals theoretical work of lifting fluid divided by dynamometer horsepower.

8. *Correct counterbalance,* which is merely the height on the force scale to the center of gravity of the loop on the dynamometer card, and tells not only whether the counterbalance is correct but, if not, what is needed.

9. *Gear torque,* which is of great importance in determining whether the gear is overloaded.

Inferred Results

Perhaps the main conclusion to be established concerning subsurface conditions is the location of the fluid level. Should the fluid level be at the pump, it

may be possible to improve the rig operation without loss of production.[5] On the other hand, if the fluid level is above the pump, then it is desirable to determine the reason for this condition. In general, high fluid can be attributed to one or more of three causes: 1, low volumetric efficiency of pump due to an ineffective gas anchor, large clearance space, poor valves, entrance losses, or slippage; 2, tubing or shoe leaks; or, 3, good volumetric efficiency but insufficient pump displacement. Which of these conditions exists can be inferred from several sources of information:

1. Dynamometer test:
   a. Shape of dynamometer card.
   b. Below-ground power efficiency.
2. Volumetric efficiency, estimated by any of several methods.[6 7 8]
3. Production data on well, gas-oil ratio, cut, etc.
4. Production history of well.
5. Previous experience:
   a. With similar wells.
   b. With particular well, old tests, etc.
   c. With particular equipment in use, gas anchor, style of pump, etc.

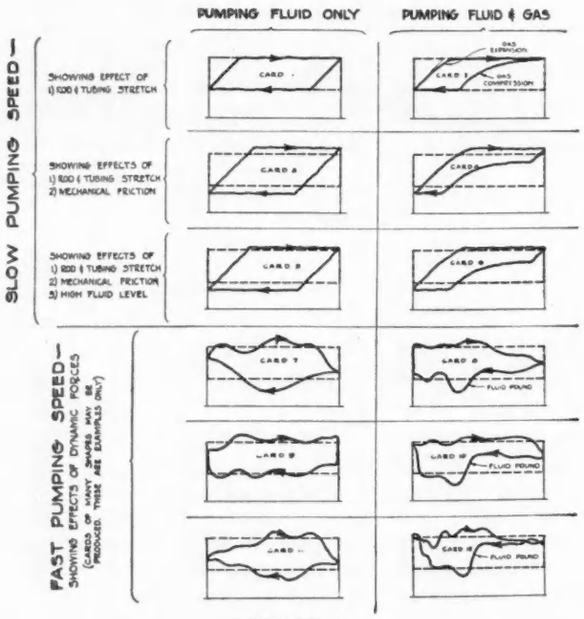


FIGURE 5
Effects on the Dynamometer Card of Common Influences.

The analysis of the dynamometer card as one of the steps in estimating subsurface conditions can be briefly described. The ideal card is rectangular in shape, with a downstroke load equal to the weight of rods in oil, and an upstroke load equal to the downstroke load plus the hydrostatic pressure of fluid acting on the gross plunger area. For comparative purposes, *it is essential* that these loads be computed and plotted on the cards actually obtained by the instrument. In Figure 5 are illustrated the effects of this ideal card of rod and tubing stretch, mechanical friction, free gas in the pump, high fluid level, and dynamic forces. Despite the fact that dynamic forces at ordinary pumping speeds may distort the card considerably[9] and obscure some of the other effects, fluid pound resulting from gas in the barrel is usually quite evident. The absence of this pound, of course, suggests that the fluid level is above the pump, whereas its existence implies that either the well is pumped off or the gas anchor is not entirely effective. Cards taken at slow speed, to eliminate dynamic forces, are of further help in estimating which of these conditions exists—particularly in shallow wells with large plungers. Table 1 summarizes the analysis by which the dynamometer and other readily-available data can be used to isolate the most probable subsurface condition without recourse to a subsurface test.

Field Procedure

In addition to the dynamometer itself, the following equipment is necessary for the average test:

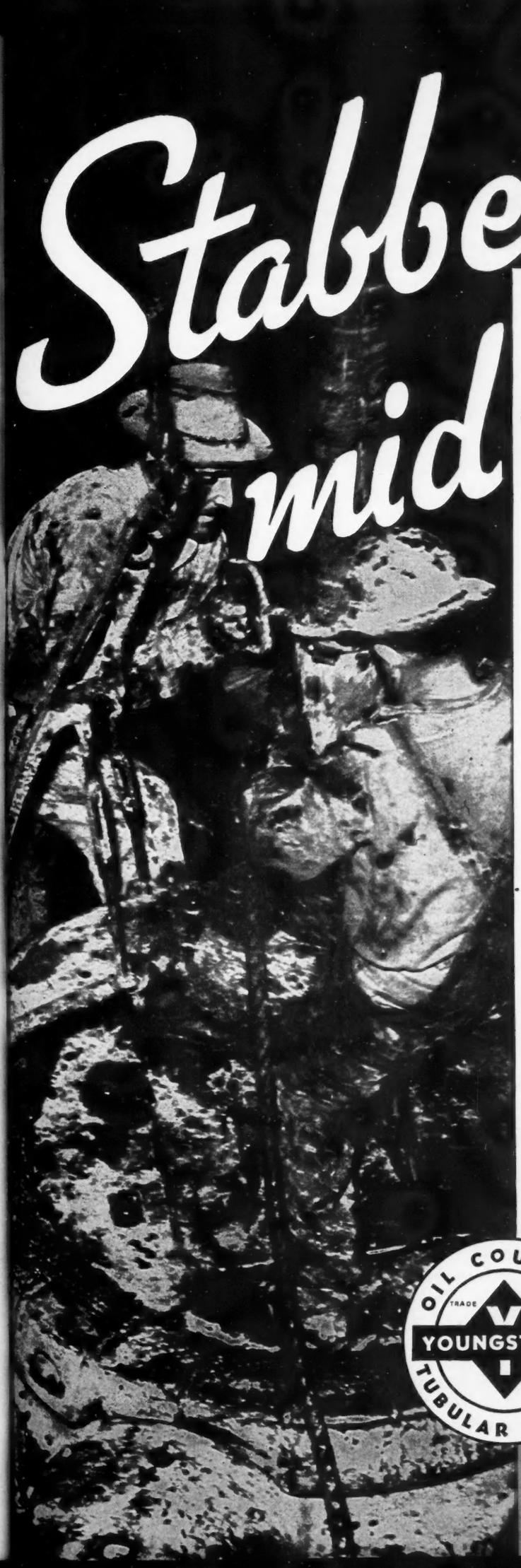
Instrument	*Use*
1. Watt hour meter or vacuum gage	Power input to motor Power output of engine*
2. Revolution counter	Average speed of prime mover
3. Tachometer	Speed variation of prime mover
4. Thermometer	Temperature rise of motor
5. Stopwatch	Strokes per minute, turns per minute, etc.
6. Flexible rule	Stroke length, pulley sizes, etc.

*The torque-manifold depression characteristics can be obtained from the manufacturer of the engine. See bibliography, reference 10.

The routine of installing the equipment should be well planned in order that the downtime will be as short as possible, preferably not more than a minute or two. If no delay is experienced in making preparations, then normal pumping conditions will be quickly resumed. As a check, however, cards should be taken on the recorder at intervals until there is

TABLE 1
Showing Some of the Sub-surface Conditions which May Be Inferred from Surface Data.

Surface data:				
Dynamometer card taken at slow speed.....	Fluid Pound Indicated	Fluid Pound Indicated	No Fluid Pound Indicated	No Fluid Pound Indicated
(Refer to Fig. 5)	(Cards 8, 10, 12)	(Cards 8, 10, 12)	(Cards 7, 9, 11)	(Cards 7, 9, 11)
Dynamometer card taken at slow speed.....	Similar to card 3 or 4	Similar to card 5 or 6	Similar to card 5	Similar to card 5
(Refer to Fig. 3)				
Volumetric efficiency.....	Low	Low	High	Low
Below-ground efficiency.....	Low	Low	High	Low
Gas-oil ratio.....	Low	High	Low	....
Cut	....	Low	....	....
Daily production.....	Regular, moderate decline	Irregular, slight decline	Regular, slight decline	....
Probable sub-surface condition.....	Fluid level at pump, displacement can be reduced	Fluid level above pump due to ineffective gas anchor	Fluid level above pump, due to inadequate displacement	Fluid level above pump, due to tubing or shoe leak



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substantially no change in their size and shape. When it is certain this condition has been reached, the test card may be taken. Several cycles should always be superimposed and averaged on any one card, as rod loads sometimes change from stroke to stroke, even though the operation is considered steady. This is especially true if the pump handles varying quantities of gas. Data taken at approximately the same time as the test card include power input, strokes per minute, turns per minute of motor, and revolutions per minute at various crank positions. This much of the test provides sufficient information to compute the definite results, but cards for other operating conditions are helpful in determining subsurface conditions and methods for improving operation.

For example, a card taken at very slow speed will be little affected by the forces of acceleration and fluid friction. A sufficiently slow speed can be obtained on most rigs by shutting off the power and scribing the record just before the machinery comes to rest. As shown in Figure 5, the comparison of the maximum and minimum loads on this record with the theoretical loads will indicate the presence of a high fluid level or excessive mechanical friction. Of course, these are compensating forces; and, in making the comparison, consideration must be given to other factors, such as the drift of the hole and the possibility of excessive leakage in plunger and valves.

Frequently a good estimate of the height of fluid above the pump can be obtained by shutting in the casinghead and taking cards while the gas pressure builds up. If the fluid level can be depressed to the oil intake, then the point at which the well starts to pump off is clearly shown on the record as the familiar fluid pound; therefore, it may be said that the head of fluid normally on the intake is equivalent to the rise in pressure observed at the casinghead.

Finally, where equipment permits, it is desirable to take cards at various pumping speeds in order to predict the effect on rod loads of permanently increasing or decreasing the speed.

Although a reference line is provided on all cards by taking a record with the indicator open to atmospheric pressure, it is necessary to make a correction

TABLE 2

Pumping-Well Operation

WELL "A"

Well

Present depth,	6890 ft.	Casing,	4¾-in. to 7260 ft.
Liner,	none	Perforations,	from 6250 ft. to 6885 ft.
Pump depth,	6712 ft.	Tubing,	6668 ft. of 2½-in. and 44 ft. of 2-in.
Pump,	2-in.×1¼-in. rod, sectional liner		
Sucker rods,	6699 ft. of ¾-in.		
Gas anchor,	outer tube, 3 in.×14 ft.		inner tube, ¾ in.×8 ft.
Production,	gross, 134 bbl.	Net	108 bbl.
Gravity of WET oil,	29.5° API		
Gas-oil ratio,	550 cu. ft. per bbl. of oil		
Casing,	open to line	Casing pressure,	0

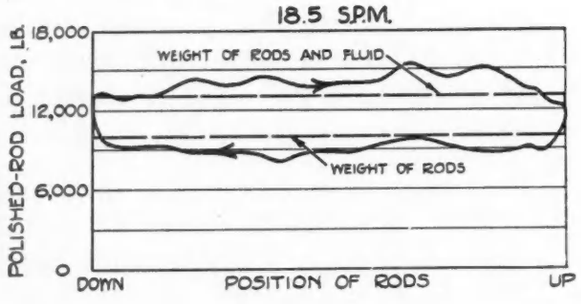
Rig

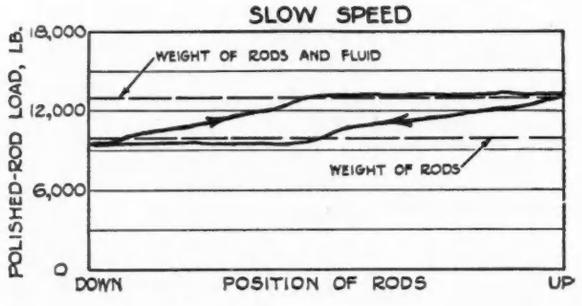
Length of stroke,			X rig front
Pumping speed,			45 in. (3rd crank hole)
Reduction unit,	chain and sprocket		18.5 strokes per minute
Counterbalance,	rotary	Ratio,	22.2 to 1
Present effective weight,		Number of weights,	10 lead
Theoretically-correct weight,			11,200 lb. (API rating)
Correct weight,			11,450 lb. (calculated)
			11,500 lb. (by dynamometer)

Motor

Controller point,					25- to 65-hp. Full-load speed, 470 to 970 r.p.m. at 50 cycles
Power input,					5 (9 is wide open)
R.p.m., average,	410	Motor temperature,	35° C.	Air temperature,	17.6 hp. 22° C.

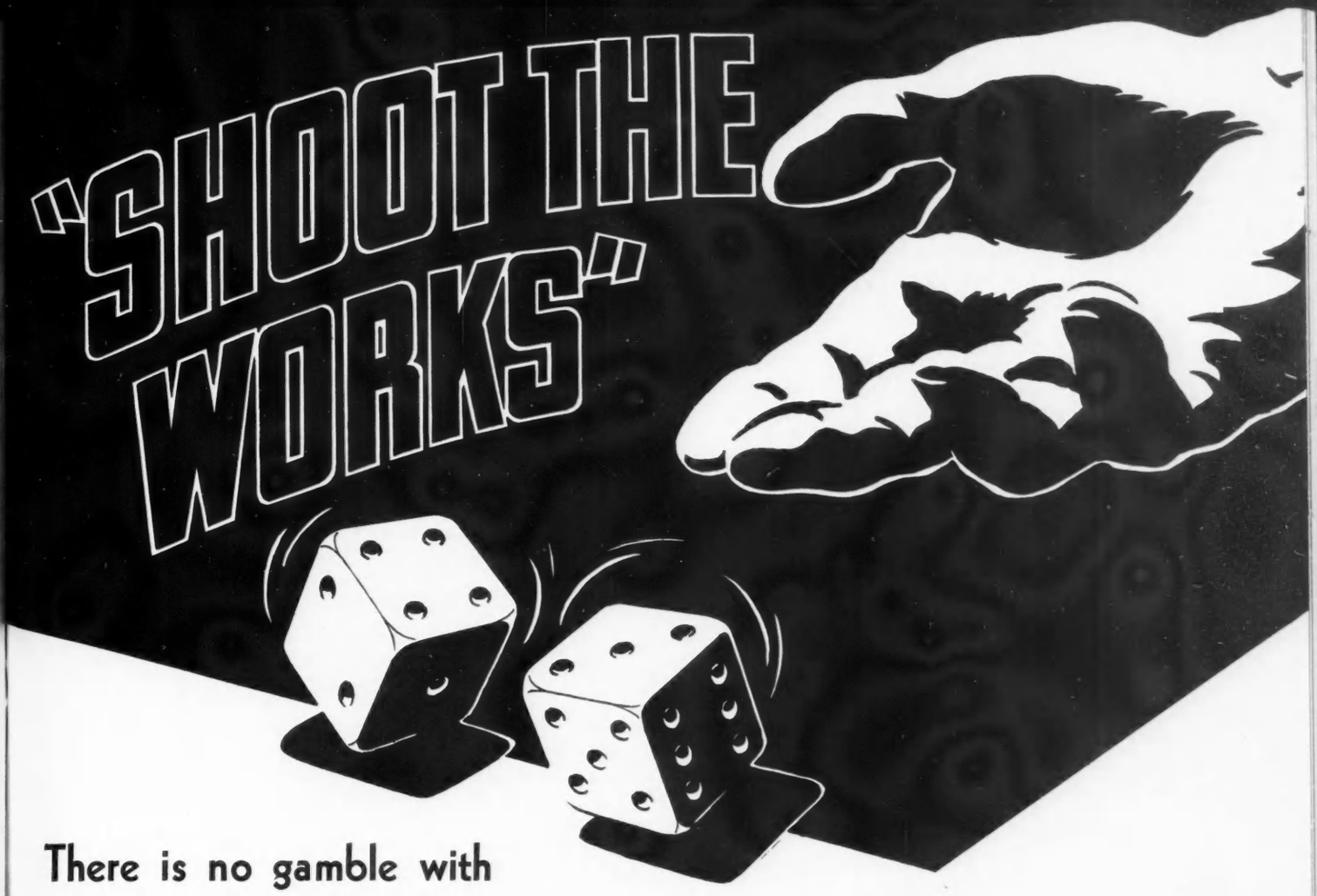
Dynamometer Cards





Dynamometer Data

Maximum load,	15,400 lb.	Above-ground efficiency,	59 percent
Minimum load,	8,100 lb.	Below-ground efficiency,	57 percent
Power at polished rod,	10.3 hp.	Estimated volumetric efficiency,	98 percent
Peak torque,	88,000 in-lb.		



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for the weight of the transformer and the static head of water in the connecting hose. This is most easily done at the conclusion of the test by operating the rig with the upper clamp released and the lower clamp tightened. The so-called "zero line" obtained may then be measured off from the atmospheric line, and plotted on the other cards.

Office Procedure

Office procedure can be presented best by discussing an actual test. Well "A" had been producing an average of 135 barrels per day gross for more than eight months with practically no decline and little trouble; and, although it was suspected that the well was capable of producing more, it was desirable to have some concrete data on the existing load and performance before making any changes. A sub-surface pressure test would have been helpful; but, because there were two joints of 2-inch tubing on bottom, the gage available could not be run without pulling tubing. Owing to the depth of the hole, this type of test would have required much time and expense, and would have given no information on the equally important question of rig loads. Therefore, a preliminary investigation was made with the dynamometer. The pertinent data and results are given in Table 2.

Using this well as an example, the calculation of results is presented herewith.

Computations of Equipment Performance

If on the dynamometer card (refer to Figure 6),

D max. = 1.20 in. = maximum deflection
D min. = 0.63 in. = minimum deflection
A_1 = 1.14 sq. in. = upper area
A_2 = 2.10 sq. in. = lower area
L = 2.97 in. = length of card
and C = 12,800 lb. per in. = calibration constant of dynamometer

Then the following computations can be made:

1. Maximum load = C×D max. = (12,800) (1.20) = 15,400 lb.
2. Minimum load = C×D min. = (12,800) (0.63) = 8,100 lb.
3. Average upstroke load $= C\left(\frac{A_1+A_2}{L}\right) = 12{,}800\left(\frac{2.10+1.14}{2.97}\right) = 14{,}000$ lb.
4. Average downstroke load $= C\left(\frac{A_1}{L}\right) = 12{,}800\left(\frac{2.10}{2.97}\right) = 9100$ lb
5. Correct counterbalance $= C\left(\frac{A_1+\frac{A_2}{2}}{L}\right) = 12{,}800\left(\frac{2.10+\frac{1.14}{2}}{2.97}\right) = 11{,}500$ lb.
6. Horsepower at polished rod $= C\frac{A_2}{L}\left(\frac{\text{length of stroke (feet)} \times \text{strokes per minute}}{33{,}000}\right) = 12{,}800\left(\frac{1.14}{2.97}\right)\left[\frac{45(18.5)}{12(33{,}000)}\right] = 10.3$ hp.
7. Above-ground power efficiency $= \frac{\text{polished-rod horsepower}}{\text{input horsepower}} = \frac{10.3}{17.6} = 59$ percent
8. Below-ground efficiency: Theoretical horsepower required to lift the fluid, assuming fluid level to be at the pump, is:

$$= \frac{\text{barrels per day} \times \text{weight per barrel (pounds)} \times \text{depth to pump (feet)}}{(1440)\ (33{,}000)}$$

$$= \frac{(134)\,(307)\,(6712)}{(1440)\ (33{,}000)} = 5.8 \text{ hp.}$$

Then, the below-ground efficiency:

$$= \frac{\text{theoretical horsepower}}{\text{polished-rod horsepower}} = \frac{5.8}{10.3} = 57 \text{ percent.}$$

Results of a number of tests in one field have been summarized in Figure 7, in which below-ground efficiencies have been plotted against the volumetric efficiencies estimated by the Coberly method.[6]

9. Peak torque: Inasmuch as it is usually necessary to know only if the torque rating is exceeded, a conservative estimate can be made by multiplying half the stroke length by the difference between the effective weight of the counterbalance and maximum load, or minimum load, whichever difference is greater. In well "A":

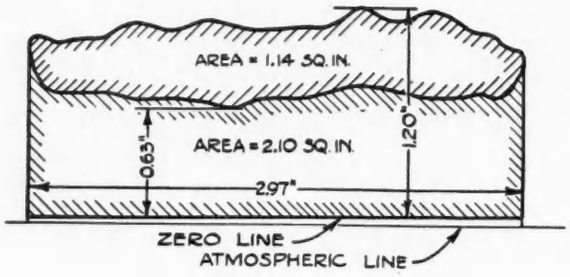


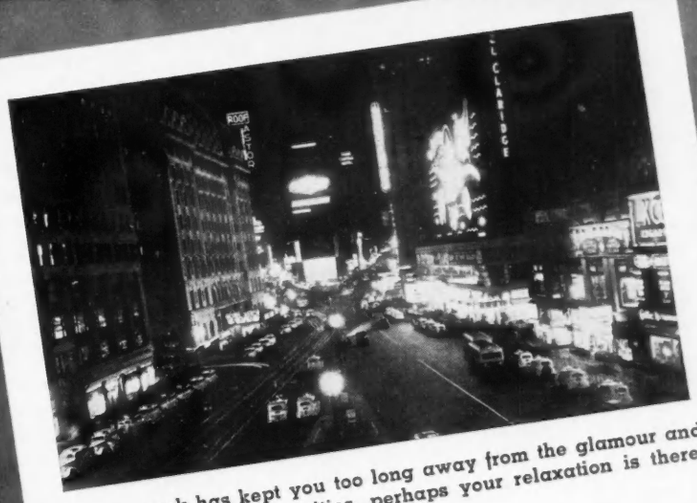
FIGURE 6
Measurements of Dynamometer Card—Well "A."

Peak torque is less than $\frac{45}{2}(15{,}400—11{,}500)$
Peak torque is less than 88,000 in-lb.

If this estimate exceeds the rating of the machine, a trial-and-error determination should be made in which the position of the crank is taken into account.

Computation of Theoretical Loads

In addition to these quantities, it is important to



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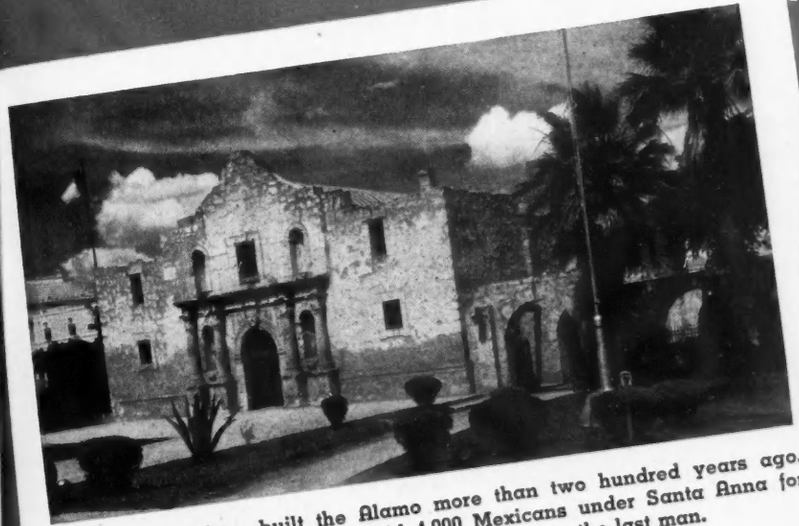

Franciscan Fathers built the Alamo more than two hundred years ago. Here it was that 182 Texans held 4,000 Mexicans under Santa Anna for 14 days, refused to surrender and died to the last man.

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know, for the purpose of comparison, the theoretical loads on the upstroke and downstroke.

10. Theoretical downstroke load
= weight of rods in oil
= length×weight per foot
=(6699) (1.482)= 9900 lb.

where 1.482 = weight per foot of ¾-in. rods in 29.5°-gravity oil.

11. Theoretical upstroke load=downstroke load+fluid load on gross plunger area
= downstroke load+depth to pump×pressure gradient of oil (lb. per sq. in. per foot.)×area of plunger
=9900+6699(0.380) (1.227)
= 9900+3100 = 13,000 lb.

the plunger travel in pumps, and will not be reviewed at this time.[5, 6, 7, 8] Each has certain limitations, and at present it is not possible to decide which is best applicable to a given well. However, so long as the engineer recognizes the limitations of the particular method used, he will not be especially handicapped in understanding his well problems and improving the operation.

The plunger travel for well "A" was obtained by subtracting from the polished-rod stroke the calculated stretch of 24 inches in the rods and tubing and adding the over-travel of 13 inches due to occelera-

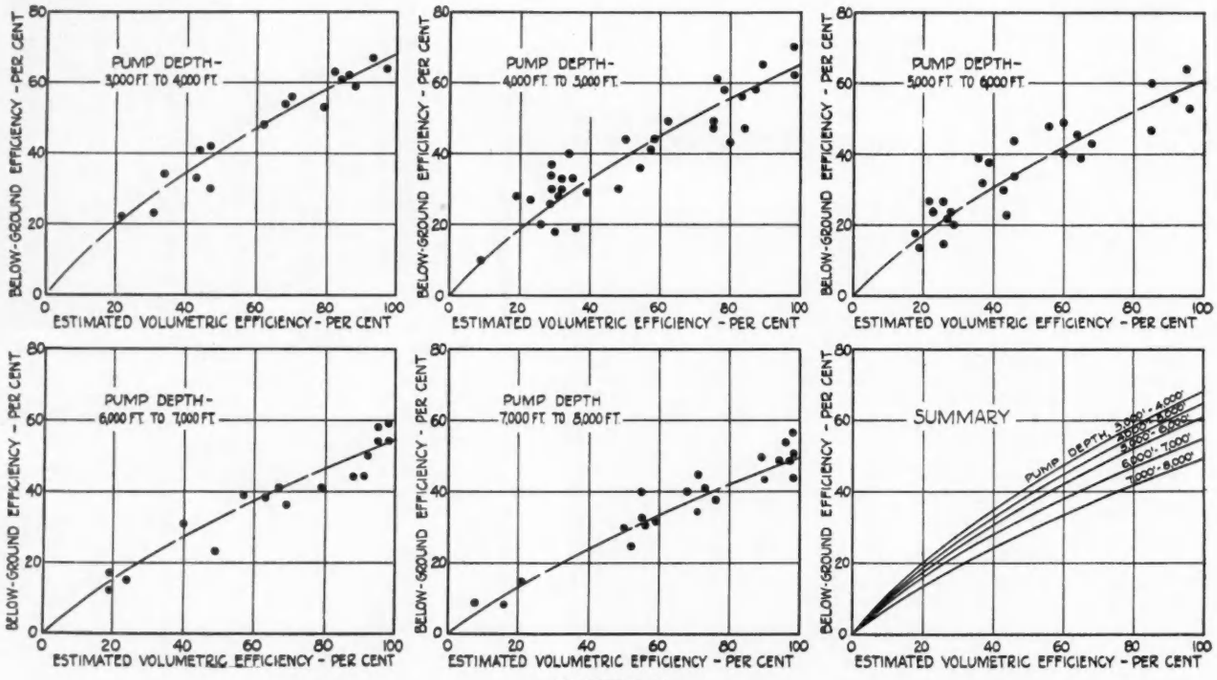
PUMP DEPTH- 3,000 FT. TO 4,000 FT.
PUMP DEPTH- 4,000 FT. TO 5,000 FT.
PUMP DEPTH- 5,000 FT. TO 6,000 FT.
PUMP DEPTH- 6,000 FT. TO 7,000 FT.
PUMP DEPTH 7,000 FT. TO 8,000 FT.
SUMMARY
PUMP DEPTH, 3,000'- 4,000'
4,000'- 5,000'
5,000'- 6,000'
6,000'- 7,000'
7,000'- 8,000'
BELOW-GROUND EFFICIENCY - PER CENT
ESTIMATED VOLUMETRIC EFFICIENCY - PER CENT

FIGURE 7

Below-Ground Efficiency Vs. Volumetric Efficiency for Wells of Various Depths

12. Theoretical counterbalance may be computed by averaging the theoretical upstroke and downstroke loads, but has little value. As shown in Figure 8, the correct counterbalance by the dynamometer is, on the average, higher than the theoretical, especially with low volumetric efficiencies.

Computation of Volumetric Efficiency

Several methods have been devised for computing

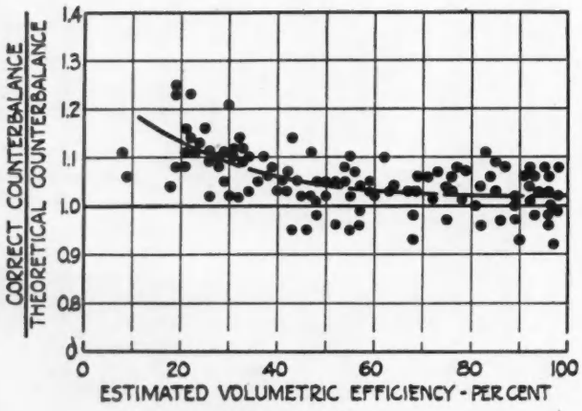

FIGURE 8

Effect of Volumetric Efficiency on Correct Counterbalance.

tion as given by Coberly.[6] With a plunger stroke of 45—24+13=34 inches, the volumetric efficiency is computed to be 116 percent. This fictitiously high figure can be attributed to either a high fluid level, which would reduce the stretch, or to the error in estimating the over-travel. In either case, it is still evident that the pump actually had a very good efficiency; a value of 98 percent was arbitrarily selected.

Inasmuch as most of the calculations which have been listed require reference to tabular data for such quantities as the weight per foot of rods in oil, pressure gradient, constants, etc., alignment charts are helpful—especially if many tests must be computed. Figures 9, 10, 11, and 12 illustrate some of the charts which can be made, with calculations for well "A" shown as examples.

Changes in Operation Suggested by Results

In order that changes in operation may be properly justified, some assurance must be had as to the nature of sub-surface conditions. The evidence available on well "A" pointed to the conclusion that maximum production was not being secured. In the first place, the well was not declining in production as fast as similar wells in the same zone. The dynamometer card taken at normal speed was full in

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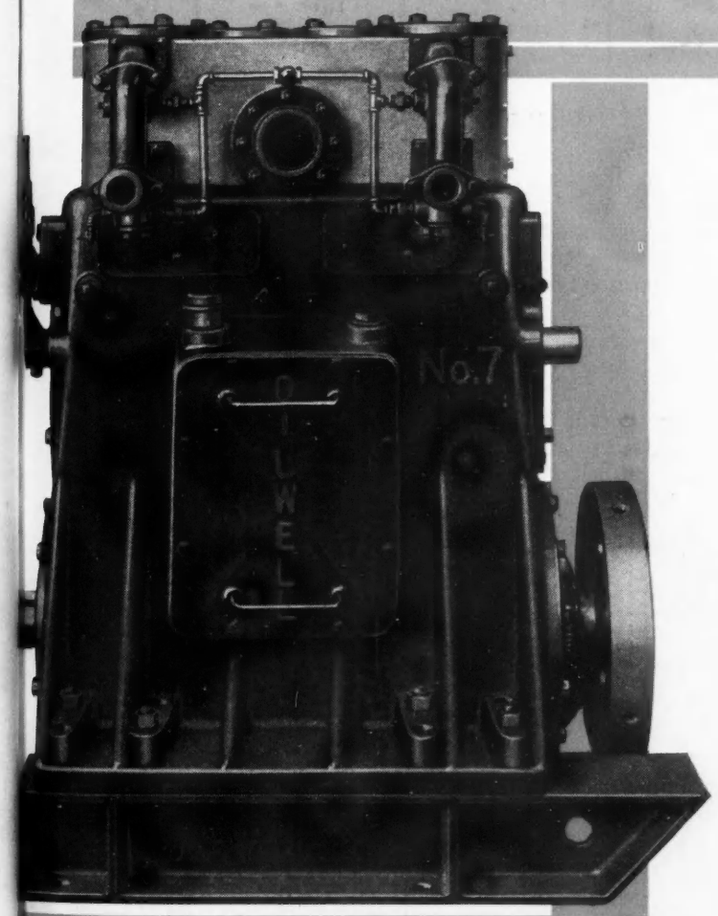

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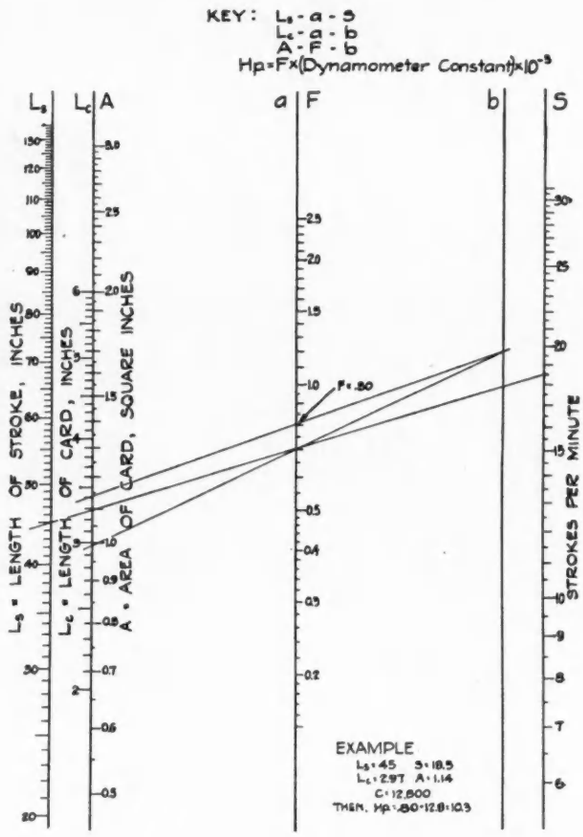


FIGURE 9
Polished-Rod Horsepower.

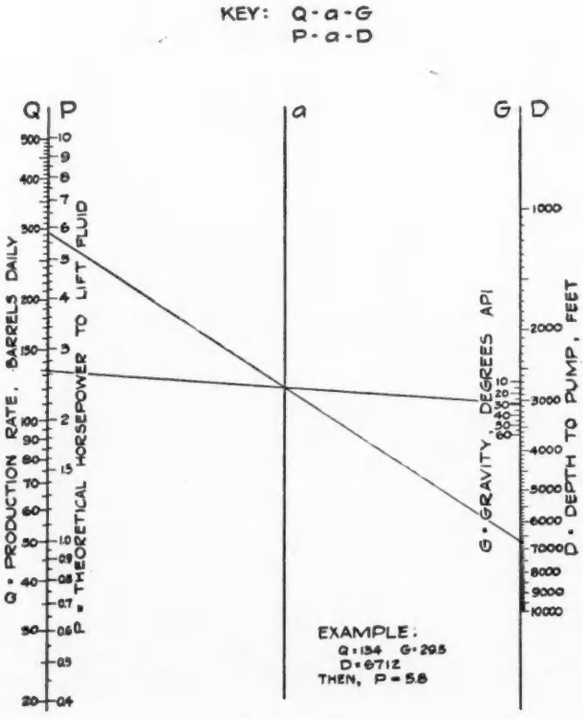


FIGURE 10
Theoretical Horsepower to Lift Fluid.

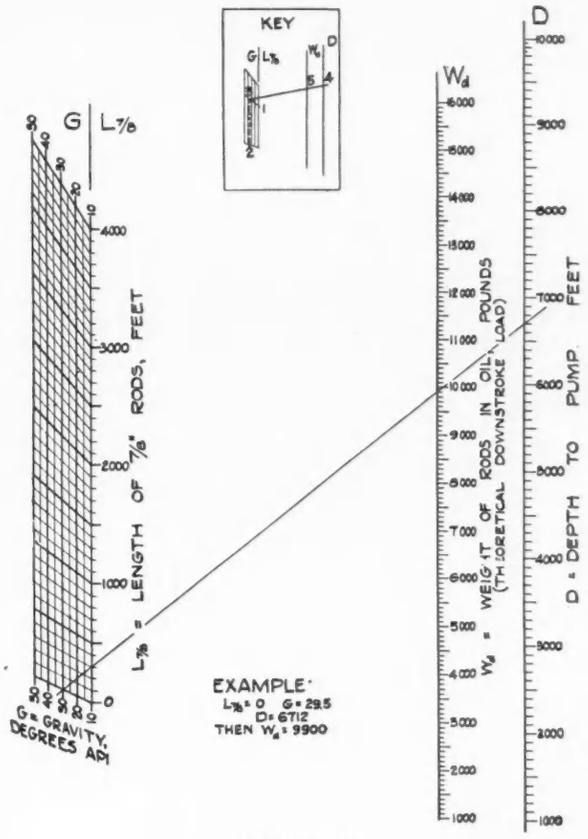


FIGURE 11
Weight of Rods in Oil—⅞-In. and ¾-In. String.

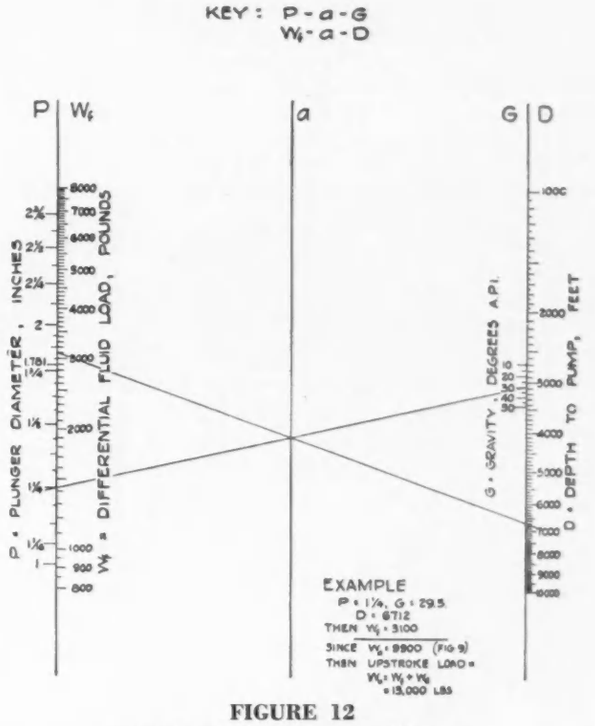


FIGURE 12
Theoretical Fluid Load on Plunger.

shape, with no indication of a fluid pound. Volumetric efficiency was very good, and below-ground efficiency better than average for wells of this depth. Finally, the slow-speed-card figure had upstroke and down stroke loads slightly less than the theoretical, thus comparing with card 5 in Figure 5.

Therefore, it was apparent that production would probably be increased by increasing the displacement. Inasmuch as gas/oil ratio was low and gas anchor of adequate size, it was doubtful if gas would be troublesome. The equipment was under-loaded with the exception of the rod string, the maximum load being excessive for trouble-free operation. If displacement were increased, this condition would undoubtedly have become more acute. However, it could be rectified by tapering the string with 1750 feet of 7/8-inch rods.

Shortly after this test, the pumping speed was increased to 22 strokes per minute; since that time, production has been maintained at an average of 175 barrels gross, 140 barrels net daily, an increase of about 30 percent (see Figure 13).

Other Examples

Well "B"

Well "B", in the stripper stage, was giving occasional trouble; in nine months there had been two pump repairs or replacements and three rod failures

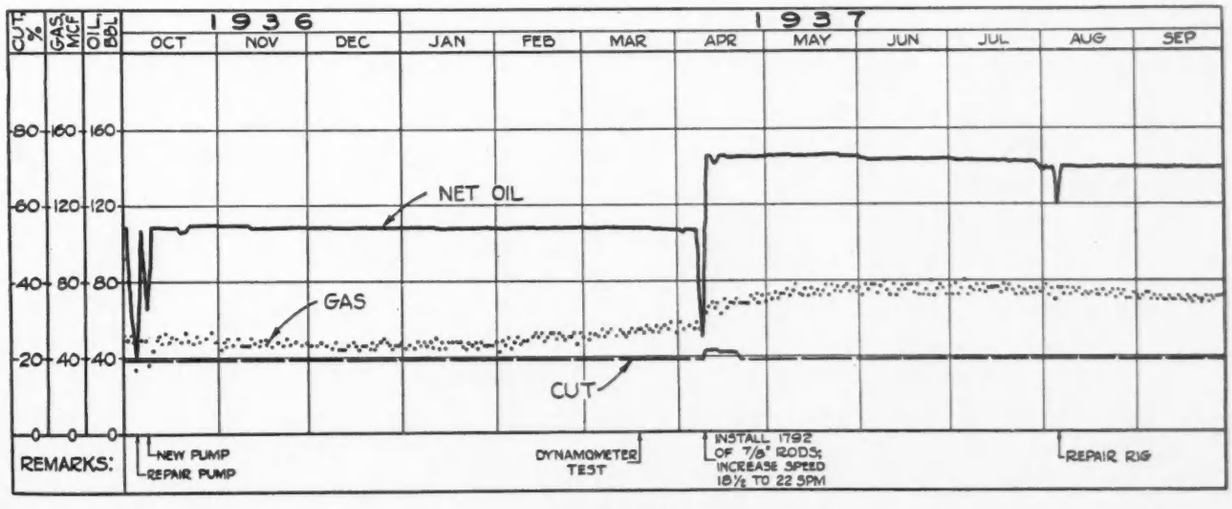


FIGURE 13
Daily Production—Well "A."

—nothing serious, but subject to improvement. Results of a dynamometer test, given in Table 3, indicated that the well was pumped off. A fluid pound was evidenced on the test card, and volumetric efficiency was low. These contditions could not be attributed to an ineffective gas anchor, inasmuch as the gas/oil ratio was low and the water cut (which tends to break up froth) was high. Rod loads exceeded the theoretical by about 5,700 pounds due to dynamic effects of high speed and fluid pound.

Since the excessive displacement appeared to be the main source of trouble, the pumping speed was subsequently reduced to 9¼ strokes per minute by installing an additional 7½-horsepower motor and a V-belt drive, using the original 25-horsepower motor as a countershaft. This change did not affect production, but reduced the power input 8.2 horsepower. In the nine months of service there have been no rod failures nor pump repairs. As compared with the previous nine months, this amounts to an annual saving of at least $522, as shown in the following tabulation.

Cost of round-tripping rods....$30 each
Cost of power.....0.6 cents per kwh.

Item	Before Slowing Down, Annual Cost Rate	After Slowing Down, Annual Cost Rate	Saving
Repair rods	$120	0	$120
Repair pump	80	0	80
Power	518	$196	322
Total	$718	$196	$522 = 73 percent

The total cost of installing the equipment was $285.

Well "C"

Ten days after re-drilling had been completed, well "C" was tested with the dynamometer to obtain general information concerning the rig operation

TABLE 3

Pumping-Well Operation.

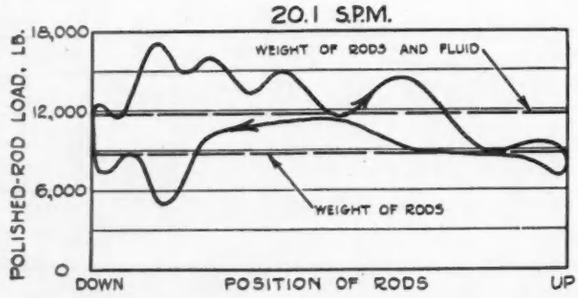
WELL "B"

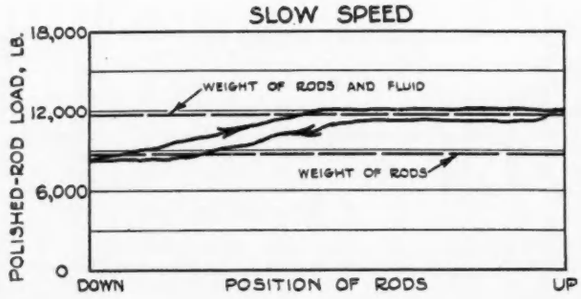
Well
- Present depth, 5750 ft. — Casing, 9-in. to 6310 ft.
- Liner, none — Perforations from 5600 ft. to 5740 ft.
- Pump depth, 5726 ft. — Tubing, 5635 ft. of 3-in. and 91 ft. of 2½-in
- Pump, 2-in.×1¼-in. rod, sectional liner
- Sucker rods, 1456 ft. of ⅞-in. and 4055 ft. of ¾-in.
- Gas anchor, outer tube, 3 in.×20 ft. Inner tube, ¾-in.×8 ft.
- Production, gross, 41 bbl. — Net 21 bbl.
- Gravity of WET oil, 21.8° API
- Gas-oil ratio, 280 cu. ft. per bbl. of oil
- Casing, open to line — Casing pressure, 0

Rig
- Length of stroke, X rig front
- Pumping speed, 44½ in.
- Reduction unit, chain and sprocket — 20.1 strokes per minute
- Counterbalance, rotary — Ratio, 22.2 to 1
- Present effective weight, Number of weights, 10 lead
- Theoretically-correct weight, 11,300 lb. (API rating)
- Correct weight, 10,200 lb. (calculated)
- 10,750 lb. (by dynamometer)

Motor — 25- to 65-hp., Full-load speed, 470 to 970 r.p.m. at 50 cycles.
- Controller point, 4 (9 is wide open)
- Power input, 13.2 hp.
- R.p.m., average, 446 — Motor temperature, 35° C. — Air temperature, 24° C.

Dynamometer Cards





Dynamometer Data
- Maximum load, 17,300 lb. — Above-ground efficiency, 50 percent
- Minimum load, 5,000 lb. — Below-ground efficiency, 24 percent
- Power at polished rod, 6.6 hp. — Estimated volumetric efficiency, 29 percent
- Peak torque, 142,000 in-lb.

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preliminary to a sub-surface pressure test. As shown in Table 4, rig loads were moderate and the counterbalance excessive. However, the important observation was that the shape of the dynamometer card is characteristic of wells not pumped off, having good volumetric efficiencies. As the card was not consistent with the low values of below-ground and volumetric efficiency, computed from test data, leakage was suspected to be the cause. Inasmuch as the slow-speed card indicated that the differential load on the upstroke and downstroke agreed closely with the theoreical, any leakage was probably not in the pump, but in the tubing or the shoe. When the tubing was pulled several days later, the leak was discovered in a tubing collar at 3,036 feet.

Conclusion

Fifteen years' experience has shown that an aggressive policy of dynamometer testing is well worthwhile. Such a policy consists of testing every well as soon as practicable after it has been put to pumping, and again whenever there is any reason to suspect that conditions have changed. Nearly every such test, if properly conducted and interpreted, should lead at least to minor improvements, and a substantial percentage of tests will lead to very important improvements. Benefits include both increases of production and reduced operating cost through elimination of troubles. This paper has outlined the procedure for maknig and interpreting such tests.

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TABLE 4

Pumping-Well Operation

WELL "C"

Well

Present depth,	3785 ft.	Casing,	9-in. to 3725 ft.
Liner,	6⅝ in. from 3681 ft. to 3785 ft.		Perforations from 3729 ft. to 3785 ft.
Pump depth,	3611 ft.	Tubing,	3611 ft. of 2½-in.
Pump	2½-in.×1¾-in. rod, sectional liner		
Sucker rods,	3592 ft. of ¾-in.		
Gas anchor,	outer tube, 2½ in.×21 ft.		Inner tube, 1¼-in.×8 ft.
Production,	Gross, 165 bbl.	Net,	162 bbl.
Gravity of WET oil,	30.7° API		
Gas-oil ratio,	100 cu. ft. per bbl. of oil		
Casing,	open to line	Casing pressure,	1 lb.

Rig

Length of stroke,		Standard	
Pumping speed,		49½ in. (4th crank hole)	
Pulley diameter, motor, 11¼ in.		23.2 strokes per minute	
Bandwheel end of countershaft, 24 in.		Motor end of countershaft,	44 in.
Counterbalance,	rotary	Bandwheel diameter,	10 ft.
Present effective weight,		Number of weights,	8 lead
Theoretically-correct weight,		8900 lb.	(API rating)
Correct weight,		7000 lb.	(calculated)
		7100 lb.	(by dynamometer)

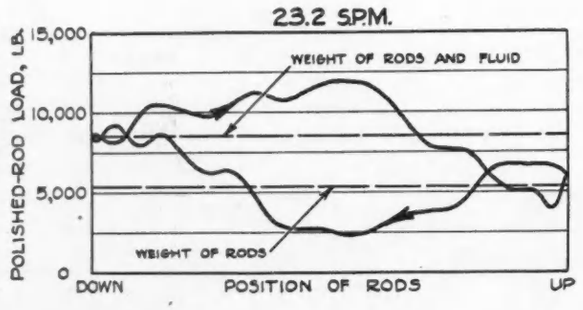
Motor 20- to 50-hp. Full-load speed, 470 to 970 r.p.m. at 50 cycles

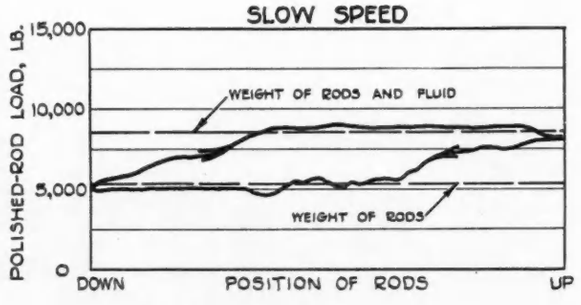
Controller point, 6 (8 is wide open)

Power input, 21.3 hp.

R.p.m., average, 401 Motor temperature, 55° C. Air temperature, 20° C.

Dynamometer Cards





Dynamometer Data

Maximum load,	11,900 lb.	Above-ground efficiency,	52 percent
Minimum load,	2,300 lb.	Below-ground efficiency,	29 percent
Power at polished rod,	11.0 hp.	Estimated volumetric efficiency,	47 percent
Peak torque,	170,000 in-lb.		

WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Mexico Conference

Details of Mexico's proposal still unknown . . . Oil officials visit Hull . . . Army revolt a possibility

STILL without any detailed knowledge of the Mexican government's proposal for settlement of the expropriation of American oil properties, officials of the oil companies affected met with Secretary of State Cordell Hull, in Washington, May 31, to discuss the situation. The meeting was described by the secretary as purely for an exchange of information.

The oil group was headed by W. S. Farish, president of Standard Oil Company of New Jersey, and included T. R. Armstrong, counsel for the company, and Donald Richberg, former head of the NRA. More than an hour was spent in discussion of the situation.

The state department has not yet acquainted the companies with the details of the note presented some days ago by the Mexican ambassador, Francisco Castillo Najera, but members of the oil group said the companies still maintain that they suffered a denial of justice and would insist upon fair reimbursement for the properties taken over.

It was explained at the department that the Mexican note has not yet been completely studied and that its details would be communicated to the affected oil companies as soon as possible. The conference was for the purpose of securing information from the companies for use in a study of the proposals submitted by Ambassador Najera.

May Underestimate Cedillo

Reports authorized by the administration in Mexico City have generally discounted the seriousness of the Cedillo revolt, but those emanating from other points indicate a possibility that the revolt may be of more importance than the administration would have the average Mexican believe.

It is observed that Cedillo, who held out for several years as a revolutionist in San Luis Potosi against a former president of Mexico, remains uncaptured. It is observed also that the government is attempting to placate agrarians of San Luis Potosi by giving them farms in return for loyalty to the incumbent administration. A total of 390,000 acres of land are reputed to have been distributed among 39,278 residents in San Luis Potosi last week for this purpose. This land was scattered in 66 communities, and reports are that similar distributions are to be made in 319 more San Luis Potosi communities soon.

Diplomatic Stalemate

Meanwhile, notwithstanding the statement of Owen St. Clair O'Malley, British ambassador to Mexico, in New Orleans May 25 that resumption of diplomatic relations between England and Mexico was "only a matter of time," immediate prognosis on the healing of the breach is not too excellent. May 30 British oil brokers were quoted as saying the Royal Dutch Shell oil combine, fearful of losing extensive oil properties in Venezuela, was exerting pressure to maintain Britain's firm stand against Mexican expropriation of her foreign owned oil industry.

Stalemating the above stand, Mexico has officially announced that Compania Mexicana de Petroleo "El Aguila," S.A., cannot expect indemnity for the expropriated properties (valued at $250,000,000) as long as English buyers hold effective what amounts to practically a boycott on crude produced in Mexico.

Army Revolt Possible

What is considered even more of a menace to Cardenas and the current administration there is the possibility of a revolt staged by the Mexican army itself. This body, hitherto considered the backbone of strength for the Cardenas regime, is reported unsatisfied with the way things are going, the rate of pay, and the reputedly continued delay on the part of the administration in the matter of fulfilling certain promises. While it was previously reported that the Cedillo revolt was forced by Cardenas to get the minds of the people off the economic chaos in the country, it is more recently reported that the reason for sending the troops to San Luis Potosi was to get them out of Mexico City, scatter them, and thus reduce the possibility of a mass majority rebellion on the part of the army. It is an old saying in Mexico that "he who pays the army rules," and recent demands from the army for increased pay have not been met.

What It Has Cost Mexico

What the expropriated oil companies meant economically to the Mexican government is demonstrated by the fact that they paid in total taxes from 1927 to last year 439,187,018 pesos (at rates ranging from two to 3.60 pesos per dollar), money that represented about 14 percent of the federal income during these 11 years.

The companies' tax payments increased from 56,201.656 pesos in 1936 to 64,850,000 pesos in 1937 (3.60 pesos per dollar was the exchange rate in both years). The companies' taxes last year worked out at about 177,000 pesos a day. From 1927 to 1936, taxes the companies paid amounted to 90 centavos a barrel and labor costs to 1.42 pesos the barrel.

At the time of expropriation, the companies were employing some 18,000 workmen, all unionized and all Mexicans—no foreigners were allowed in the oil unions—and about 1500 executives and technicians, some of them Mexicans but most of them foreigners —largely American or British. These executive jobs vanished with expropriation. The Mexican Eagle alone had about 1000 executives and technicians in its employ.

Oil and by-products exports last year totaled 24,960,335 barrels, and those of 1936, 25,039,665 barrels. Exports last year were to: United States (including Hawaii), 8,051,861 barrels (9,034,755 in 1936); Great Britain (including dominions and possessions), 7,017,613; Europe, 3,800,260; South America, 877,681; and others, 5,212,920 barrels.

Fire of undetermined origin that late in the week ruined much railroad property at Perote Veracruz port, was a blow to the Mexican government's oil administration, for it destroyed two full 35,000-barrel oil storage tanks. The oil loss was not so heavy, but tanks' destruction is serious because all storage is sorely needed.

On June 1 "Boletin Financiero," a Mexican publication, stated, "Nothing so far indicates that a satisfactory settlement of the petroleum question may be expected soon. There is no official news that petroleum is being exported in satisfactory quantities. The companies insist they will reject any plan to pay for expropriated properties in installments."

Alberta Yield Soars

Turner Valley production three times what it was in first four months of 1937 . . . Wildcats look good

Despite proration that was holding production to 42 percent of potential in Turner Valley, Alberta oil production during the first four months of this year was almost three times that produced during the corresponding period of last year and almost six times that of the first four months of 1936, according to official provincial government figures. Approximately 99 percent of the province's production comes from Turner Valley.

Production in April, announced last week, was 447,241 barrels, compared to 172,130 barrels produced in April, 1937; 76,615 barrels in the same month of 1936, and 73,013 barrels in April, 1935. The province's production during the four month period from January through April was more than an entire year's output prior to 1937, when the yield totaled 2,796,908 barrels. Turner Valley's first crude producer was drilled in two years ago this month, but it was not until last year that development reached extensive proportions.

Four tests were completed in Turner Valley last week, with another five drilling in the Madison limestone, producing formation. On wildcat structures, two tests were at interesting stages and others were preparing to resume after winter shutdowns made necessary by impassable roads.

Takes in More Zone

National Petroleums, Ltd.'s 2, which assured a mile southern extension to the west flank of Turner Valley before encountering the heavy black horizon of the limestone, stopped drilling at 7640 feet, 532 feet in the Madison, and after acid treatment registered a pressure of 450 pounds. It is being prepared for test. Plans had been made to complete this test several weeks ago 70 feet higher than present bottom when a good gas and oil flow was encountered. Analysis of the lime samples, however, revealed that the hole had not yet penetrated the heavy black lime found at producing wells to the north. Location is Legal Subdivision 14, Section 9, Township 18, 2-w5.

Barsac Petroleums, Ltd.'s 1, Legal Subdivision 12, Section 21, Township 18, 2-w5, southern offset to Davies Petroleums, Ltd.'s 2, one of the field's larger producers, stopped at 6820 feet, 430 feet in the Madison, and completed running tubing.

Tests drilling in the Madison limestone, all expected to complete this month, were: Royalite Oil Company, Ltd.'s 30, Legal Subdivision 11, Section 32 Township 18, 2-w5 drilling at 7508 feet of which 288 feet was lime; United Oils, Ltd.'s 5, Legal Subdivision 1, Section 20, Township 18, 2-w5, drilling at 6944 feet, or 105 feet in the Madison; Globe Royalties, Ltd.'s 1, Legal Subdivision 7, Section 29, Township 18, 2-w5, drilling at 7025 feet below cemented casing, 105 feet in the lime; Vulcan-Brown Petroleums, Ltd.'s 1, Legal Subdivision 10, Section 5, Township 19, 2-w5, resuming at 7023 feet after setting casing 10 feet in the lime, and Frontier Royalties, Ltd.'s 1, Legal Subdivision 11, Section 16, Township 18, 2-w5, drilling at 6551 feet or 62 feet in the Madison.

Anglo-Canadian Oil Company, Ltd.'s 2 had derrick up and was scheduled to spud this week on Legal Subdivision 13, Section 33, Township 16, 2-w5, the most southern location in Turner Valley.

Wildcat in Lime

On the Green Valley structure, Green Valley Petroleums, Ltd.'s Banner 1 wildcat on Legal Subdivision 6, Section 34, Township 17, 3-w5, drilled out cement used to set casing in the Madison limestone and was making new hole in that formation. This test reported an encouraging oil show several weeks ago, and drilling to completion was delayed by a tedious fishing job.

Baling was in progress at New Valley Oil Company, Ltd.'s wildcat on Legal Subdivision 4, Section 6, Township 21, 2-w5, on the New Valley structure. Between 1800 and 2000 barrels of crude seeped into the hole while shut down for the winter, and when bailing has been completed, casing will be lowered and drilling resumed.

Improvement in road conditions must precede movement of equipment to Anaconda Oil Company, Ltd.'s wildcat on Legal Subdivision 15, Section 9, Township 22-12-w4, on the Steveville structure, which has been shut down at 1200 feet during the winter.

Venezuelan production is steady in March

Production of petroleum in Venezuela during the month of March, 1938, amounted to 2,233,735.161 metric tons, an increase of approximately .27 percent over production reported for March, 1937, and an increase of 9.6 percent over the month of February, 1938, according to figures released by the inspector general of hydrocarbons, ministry of works, Caracas.

Exports of petroleum from Venezuela during March (1938) were 2,133,847.262 (including 1,308.881 metric tons of gasoline) representing an increase of approximately 5.4 percent over exports during March, 1937, and an increase of approximately 12.4 percent compared with the month of February, 1938.

Oil well completions in Venezuela during March totaled 68. Venezuelan Oil Concessions, Limited, accounting for 25, Creole Petroleum Corporation, a subsidiary of Standard Oil Company of New Jersey, accounting for 16, Mene Grande Oil Company, a Gulf Oil Corporation subsidiary, accounting for 12, Lago Petroleum Corporation accounting for 9, Caribbean Petroleum Company accounting for 4 and Colon Development Corporation accounting for 2. In addition to those used on wildcats, 43 strings of tools were drilling at the end of the month.

Comparative figures of production by months compared with last year were as follows:

PRODUCTION (In Metric Tons)

Month	1938	1937
January	2,260,214.166	1,414,359.928
February	2,037,616.078	1,940,652.722
March	2,233,733.161	2,227,656.227
Total	6,531,563.405	5,582,668.877

Production by fields and companies during March, 1938, according to a compilation of Loretto P. Camus, was as follows:

Field and Company	Metric Tons
Cabimas, Venezuelan Oil Concess'ns.	115,752.685
Cabimas, Lago Petroleum Corp.	179,997.301
Cabimas, Mene Grande Oil Co.	48,444.117
Cabimas, Cia. de Petroleo Lago.	1,967.479
Lagunillas, Venezuelan Oil Conc'ions.	299,156.604
Lagunillas, Lago Petroleum Corp.	313,246.682
Lagunillas, Mene Grande Oil Co.	159,773.753
Tia Juana, Venezuelan Oil Conc'ions.	178,427.650
Tia Juana, Lago Petroleum Corp.	139,548.411
Tia Juana, Mene Grande Oil Co.	130,701.524
La Concepcion, Venezuelan Oil Concessions	10,748.767
La Paz, Venezuelan Oil Conc'ions.	13,769.225
Mene Grande, Caribbean Pet. Co.	172,961.343
El Cubo, Colon Development Co.	54,418.598
El Mene de Mauroa, British Controlled Oilfields	6,483.475
Cumarebo, Stand. Oil Co. of Venez.	28,054.025
Hombre Pintado, Central Area Exploitation	1,752.994
Quiriquire, Stand. Oil Co. of Venez.	322,032.226
Pedernales, Stand. Oil Co. of Venez.	22,819.390
Sur de Anzoategui, Mene Grande Oil Company	10,595.167
Temb'ador, Lago Petroleum Corp.	22,941.627
Yopales, Stand. Oil Co. of Venez.	140.118
Total	2,233,733.161

Cuba to control petroleum concessions for 30 years

Petroleum concessions will be rigidly controlled by the Cuban government for 30 years, according to a bill recently passed by the lower house and subsequently approved by the senate. The bill constitutes Cuba's petroleum law, providing for regulation of the exploration, production, refining, marketing and transportation branches of the oil and gas industry.

Unofficial versions of the bill reported in Cuba are to the effect that concessionaires must pay a royalty of 15 centavos per year per hectare for claims which are worked and that a further royalty of 10 percent in cash must be paid on all petroleum extracted.

Three parties to study Gaspe Peninsula deposits

Three Quebec government survey parties will go to Gaspe early in June to start geological studies in connection with petroleum deposits reported to have been discovered on the Gaspe Peninsula, A. O. Dufresne, Quebec director of mines, announced last week. The geologists will also study copper deposits reported in the lower St. Lawrence region.

MEN IN THE INDUSTRY'S NEWS

HENRY L. DOHERTY RECEIVES HONORARY DEGREE OF DOCTOR OF SCIENCE FROM UNIVERSITY OF MIAMI

DEGREE IS CONFERRED FOR HIS SCIENTIFIC AND ENGINEERING CONTRIBUTIONS

THE outstanding contribution of Colonel Henry L. Doherty, president of Cities Service Company, New York City, to the scientific and engineering world, particularly his work for the prevention of waste of petroleum, won for him the degree of doctor of science at the University of Miami on Memorial Day.

The honorary degree was conferred upon him by the educational institution for his personal studies and researches into the knowledge of fuels and gases and their economic utilization, his pioneer fight to prevent waste of natural resources of gas and petroleum, and his moral and financial backing of engineering education. He originated unit operation of oil fields, and long ago recognized the value of conserving reservoir energy.

Doherty has been honored many times for his promotion of scientific and inventive enterprises. In 1931 he received the degree of doctor of engineering from Lehigh University; in 1929 the degree of doctor of laws from Lincoln Memorial University; the degree of doctor of science from the same Tennessee institution in 1931; and last year the honorary degree of doctor of letters from Temple University at Philadelphia.

He also has been honored by various engineering societies and holds several medals given on behalf of his numerous inventions. On February 16, 1938, the American Institute of Mining and Metallurgical Engineers bestowed its highest honor upon him, the Anthony F. Lucas award.

Doherty's business career started as a newsboy at the age of 10 in Columbus, Ohio, where he was born in 1870. At 12 he became office boy with the local gas company and educated himself during his spare moments. By the time he was 20 he had pretty well mastered the problems of Columbus Gas Company, and for the next 15 years was engineer and manager of public utility firms in various cities. In 1905, at the age of 35, he organized Henry L. Doherty & Company, bankers and operators of public utility corporations. Five years later he organized Cities Service Company, holding company for a large number of public utility and petroleum companies with assets of more than a billion dollars.

HENRY L. DOHERTY

TODDIE LEE WYNNE, an official of American Liberty Oil Company, Dallas, has been elected president of the American Liberty Pipe Line Company. He succeeds the late Dudley S. Golding. Clint W. Murchison was re-elected vice-president, and D. R. Zachry, former secretary, was made treasurer. He will continue in active charge of pipe line operations. V. H. Maxwell was promoted to secretary, and also made a member of the board.

MICHAEL J. LEAHY, consulting mechanical engineer, chemist, metallurgist, and patent technician, has opened a laboratory at 809 Nashville Street, Fort Worth, Texas. He also has moved his office to this address.

The laboratory is being equipped for research and development of industrial chemical and metallurgical processes; and for experimental work on these types of problems arising in the petroleum industry. The laboratory will be used for the testing of new processes on a semi-plant scale in which commercially obtainable metals and parts and industrial grades of raw materials will be used. From the data so obtained, Leahy proposes to design full-scale equipment.

For the past two years, he has been doing considerable research and actual field tests on new methods of applying so-called hard metals to the cutting edges of drilling bits and for building up parts of mud pumps that are subjected to excessive wear and abrasion.

WALDO (MICKEY) SHELDON, manager of drilling operations for the Socony-Vacuum Interests in Colombia and Venezuela, with headquarters at Caracas, spent several days in Dallas the last week winding up the purchase of oil field supplies after attending the International Petroleum Exposition at Tulsa.

B. W. BEEBE accepted the position of district geologist for British American Oil Producing Company at Wichita, Kansas, effective June 1. Beebe recently resigned as geologist in the office of the vice president of exploration of Shell Petroleum Corporation at St. Louis, Missouri.

GRAY MELMS has been appointed scout for the Houston office of Salt Dome Oil Corporation to succeed O. K. Brown who leaves June 1 to become scout for the company in Corpus Christi, Texas.

TYSON SEARCY is the new scout for Atlantic Refining Company, Houston, succeeding Ed. Dilley who has been made assistant land man.

W. S. FITZPATRICK, former executive of Prairie Oil & Gas Company, and later a director of Consolidated Oil Company, has retired because of ill health. He will make his home in New York and Florida.

R. E. HOLCOMB has been placed in charge of the new office opened by Sunray Oil Company, Edison building, Los Angeles. Formerly he was in the land department at Tulsa headquarters. Enlargement of field operations of the company by purchase of 65 producing wells in the Wilmington and El Segundo fields January 1 brought establishment of the office.

Holcomb has been connected with the oil industry for 19 years. He was with the Skelly Oil Company as assistant treasurer before joining the Sunray organization.

Sunray Oil Company became active in California in a material way in 1937 when W. H. Eastman, superintendent of production for Oklahoma and Kansas, was transferred to California.

W. H. BRATCHES, purchasing agent, Shell Petroleum Corporation, has been elected president of the Shell Employees Association in Tulsa. He succeeds C. G. McLaren. M. B. Tucker, production department, is vice president; Tommie Raper, exploration department, is secretary.

E. S. PORTER, vice president of Amerada Petroleum Corporation, Tulsa, and F. W. Covault, Fort Worth division superintendent of production, made a joint inspection the past week of the company's properties in West Texas and Southeastern New Mexico.

E. M. CRAIG, president, heads officers of Mar-Jon Oil Company, Ltd., Alberta producing company, elected during the firm's annual meeting held last week at Vancouver, British Columbia. Other officers are H. G. Harding, secretary and managing director, and John Finch, R. V. Prenter and R. K. Farris, directors.

JOHN PHILLIPS was re-elected president of Phillips Petroleums, Ltd., when shareholders of the Alberta, Canada, producing company held their annual meeting last week in Calgary. Also named were F. L. Shouldice, vice president; G. D. C. McEwen, secretary, and A. J. MacWil-

liams and John Dyke, directors. Phillips reported the company's pathfinder in northern Turner Valley was below 5350 feet and logging favorably with large producers on the southwest flank.

WINFIELD GIVENS, district manager for Sun Oil Company at Mattoon, Illinois, will move his staff of 12 engaged in production activity in Illinois, Indiana and Kentucky, to new district headquarters being established in Evansville, Indiana. The company's present drilling activity is centered in Posey County, Indiana, Edgar and Macon Counties, Illinois, and Henderson County, Kentucky.

E. C. BREENE, president of Winona Oil Company, has returned to his Oil City, Pennsylvania, headquarters following a tour of the Mid-Continent.

I. W. JONES, H. W. McGerrigle and R. A. Brown will head three geological parties which this summer will continue studies of oil resources on the Gaspe peninsula of Quebec, Hon. Onesime Gagnon, provincial minister of mines, announced last week at Quebec.

R. A. BROWN, JR., Brown Oil Company, Alberta producing company, last week showed color motion pictures depicting activity in the growing Turner Valley oil field to business and financial groups in Toronto.

CLIFFORD J. ALEXANDER, Shell Petroleum Corporation, New Orleans, has been named vice president of the National Association of Purchasing Agents. The organization held its annual convention in St. Louis, Missouri, last week.

M. P. LAURENT

For 11 years chief engineer for W-K-M Company, Inc., Houston, has resigned that position and after a short vacation will engage in consultation work with headquarters at Houston.

NEWLY ELECTED OFFICIALS OF THE ENGINEERS CLUB OF TULSA ARE INDUCTED INTO OFFICE

FLOYD W. ROBSON IS PRESIDENT AND R. G. AYERS EXECUTIVE VICE PRESIDENT OF CLUB

FLOYD W. ROBSON, president, and other officials recently elected by the Engineers Club of Tulsa, took office June 3 when the annual dinner and business meeting was held at the Tulsa Club. Robson, who was executive vice president last year, succeeds A. J. Kerr, district manager, Pittsburgh Equitable Meter Company, Tulsa. The new president is in charge of design, drafting and printing for Carter Oil Company, Tulsa.

Other officials for the coming year are:

R. G. Ayers, National Supply Company, executive vice president; R. L. Ducker, Oklahoma Natural Gas Company, treasurer; George F. Isley, Shell Petroleum Corporation, chairman of the program committee; Hollis P. Porter, consulting engineer, chairman of the public relations committee; A. B. Morris, consulting engineer, chairman of the membership committee; A. A. Hardy, Sinclair Prairie Oil Company, chairman of the entertainment committee; Mark L. Terry, The Texas Company, and Victor H. Cochrane, consulting engineer, directors; A. J. Kerr, ex officio member of the board; R. C. Marr, Bariod Sales Company, president of the junior group, director.

FLOYD W. ROBSON

SAM MYERS of Blackwell Oil & Gas Company and Mullendore, Berry & Berry has arrived in Flora, Illinois, from Stillwater, Oklahoma, to look over operations of his companies in the basin area.

J. J. McPOLAN, superintendent of pipe lines for the Magnolia Pipe Line Company in the North Texas district, has been promoted to superintendent of the central division, and is succeeded by C. E. Still, former district foreman at Shreveport.

F. A. GABY, vice president of the British American Oil Company, Ltd., is to arrive in Calgary, Alberta, this week from Toronto to survey sites for a proposed new refinery for processing Turner Valley crude.

J. W. R. McLEOD, Vancouver, British Columbia, operator, was a visitor in Calgary, Alberta, last week.

LLOYD WILLIAMSON, president of Oil Producers Agency, has been elected president of five oil companies in which he has been active for many years: California Star Oil Company, O'Donnell Oil Security, Lakeport Petroleum Company, Section One Oil Company and Circle Oil Company, all interests controlled by Thomas A. O'Donnell, California oil operator.

Williamson got his start in the petroleum industry as tool dreser in 1914. He is vice chairman of the Central Committee of California Oil Producers and was recently named to head the Oil Producers Agency. Prior to his recent election, he was vice president and general manager of the O'Donnell interests.

W. D. ROGERS of Mexico City, formerly with Compania Mexicana de Petroleo, El Aguila, S.A., has been transferred by Shell interests to Bogota, Colombia.

HOMER D. CHESSER, 33, West Texas driller residing at Fort Stockton, died May 29 in a San Angelo hospital, where he had been confined for a week.

S. E. BUCKLEY, petroleum research engineer for Humble Oil and Refining Company, Houston, was the principal speaker at the Houston Geological Society's weekly business session at the Lamar Hotel June 2. He discussed "Pressure Relationship to Production in the East Texas Field."

R. C. KULDELL, president of Hughes Tool Company, Houston, spoke to about 6000 employes of the company who gathered at a picnic in Galveston County Park. In his talk he particularly stressed the importance of harmony and friendship between the management and workers, and expressed hope that both groups would have an opportunity to become better acquainted.

A.A.P.G. mid-year meet

The Mid-year meeting of The American Association of Petroleum Geologists will be held at El Paso, Texas, September 27-October 2, 1938, under the direction of the West Texas Geological Society, Midland, Texas. Berte R. Haigh, of University Lands, Midland, is general chairman of arrangements.

THE WEEK'S NEWS SUMMARIZED

Legal

Pleas of *nolo contendere* entered by 14 oil firms and 11 executives in one of the two Madison anti-trust suits were accepted last week by the federal court. Each defendant was assessed fines of $15,000. Court costs aggregating $25,000 brought the total fines to $400,000.

This action had no bearing on the other suit, commonly referred to as the "first case," but Judge Stone announced he would rule June 9 on motions submitted by the defense counsel after 16 companies and 30 individuals were convicted in this suit.

Markets

The market situation remains favorable, as prices continue steady, under the strict curtailment of crude oil production and the prevailing relatively low levels of refinery activity.

Crude oil prices apparently are safe for some time despite some lingering anxiety.

Product prices have remained mostly unchanged during the past few weeks, and they promise to hold at present levels. Gasoline prices offer some indications, moreover, that they may show some improvement, as the seasonally increasing demand is causing some active bidding for supplies. Additional buying by refiners in the open market has occurred.

The approaching wheat harvest is causing some stimulation of agricultural demand for kerosene and tractor fuel and of railroad demand for heavy fuel oils, for moving the grain.

While low crude production is a favorable influence, some unfavorable factors prevail, including surpluses of gasoline and fuel oil.

Proration

Exceptional curtailment of crude production is scheduled for June, under the allowables ordered in the principal producing states.

The six leading states that account for about 91 percent of United States production propose to hold their output 332,012 barrels a day, or 11 percent, lower than the current market demand, as estimated by the Bureau of Mines.

These low allowables promise to permit substantial reductions of excessive above-ground stocks of crude and refined oils.

Last week brought announcements of June allowables in several states that previously had not adopted new quotas.

Kansas will keep the same allowable figure, 160,000 barrels daily, in June as was in force during May. This is 12,300 barrels below the state's estimated quota as determined by the Bureau of Mines. A combination plea and threat concerning pipe line proration below this figure was presented by the State Corporation Commission chairman, who stated the commission would endeavor to see that every barrel of this oil was marketed.

Oklahoma also will maintain its same allowable, 405,000 barrels per day. However, this will be 17,742 barrels lower than the May average, as the figure conforms to the emergency order issued May 10.

Legislation

Pending oil legislation was stymied last week behind the barrier raised against controversial measures by Congressional leaders in the interest of early adjournment of the present session.

A highly exercised California delegation was seen as making quick passage of the Nye seizure resolution impossible in the house, while the question of constitutionality continued to plague the senate committee in charge of the Gillette divorce bill.

With adjournment of congress now possible by June 11, little chance is seen for further action on either measure this year.

Labor

Although numerous efforts have been made in the past to reach a better understanding between certain labor groups and employers, attempts in this direction have not been very successful. This was displayed again last week when a strike broke out at the Pure Oil Company's refinery at Muskogee, Oklahoma, in which several persons were injured. According to union members, the trouble arose when the company discriminated against union workers.

The way was cleared last week for a ruling on the constitutionality of Pennsylvania's 44-hour working week law, when the State Supreme Court concluded its hearing on the matter. The law has been in the courts for the past six months.

Pipe line

Work of clearing the right-of-way for the 290-mile 12-inch pipe line from the South American Gulf Oil Company's Barco concession in Colombia to Covenas on the Caribbean sea has been started. When completed, in about 18 months, the line will provide an outlet for the 23,000 barrels of shut-in production.

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In Legal Circles

Pleas for *nolo contendere* for 25 trust defendants in "Second Madison Suit" are accepted by federal court . . . Rule June 9 on "first case" motions

Trust suit defendants fined $15,000 each

Federal Judge Patrick T. Stone at Madison, Wisconsin, June 2 received and granted pleas of *nolo contendere* entered by counsel for 14 major oil companies and 11 of their officers to charges of violating the Sherman Anti-Trust Act through alleged conspiracy to restrict jobber margins through use of uniform jobber contracts. Fines of $15,000 were assessed against each defendant, in addition to costs aggregating $25,000 for the 25 defendants entering the pleas.

The action of the court was a formality, but a necessary step to conclude what has been commonly referred to as the "second" Madison case against those defendants. The plan was worked out by defense and government counsel and announced by the Department of Justice in Washington a week ago. (See THE OIL WEEKLY, May 30, page 57.)

To Rule on Motions

Judge Stone announced he would rule June 9 on motions submitted by defense counsel following conviction in January of 16 companies and 30 individuals in the "first" case, which was not affected by last week's developments. They remain of a group of 23 companies and 46 individuals brought to trial last October 4 on charges of conspiracy to raise retail gasoline prices in the same area through operation of illegal buying programs in the Mid-Continent and East Texas fields.

Defense counsel during trial of that case maintained that major company buying activities were in furtherance of a stabilization program inaugurated by the government under the NRA and continued in accordance with the President's desire to retain the spirit of the gains made under the Recovery Act despite its invalidation by the United States Supreme Court.

Seven companies and 16 individuals were freed during the course of the four-month trial, either on motions presented by the government after presentation of the prosecution's case revealed an insufficiency of evidence or on motion of defense counsel just before the case was given to the jury.

The convicted companies and individuals, many of whom are among those who entered pleas of *nolo contendere* to the "second" indictment last week, await sentence pending decision of the court on defense motions seeking an arrest of judgment or a new trial. Several companies and individuals indicted in the "second" case, but who did not enter such pleas are among the seven companies and sixteen individuals who obtained release during the trial last winter. Trial of those defendants is tentatively scheduled for September 26.

In announcing his action on the pleas of *nolo contendere,* Judge Stone said:

"This case is before the court for disposition upon pleas of *nolo contendere* by some of the defendants in this action, after negotiations over a considerable period of time between the parties.

"In the usual criminal case, when criminal intent is the chief element such negotiations may be, and perhaps on occasion have been, improper. They cannot, in any event, conclude the court.

"This case, however, lies in a field where the government might with equal propriety, have proceeded initially by a civil action in equity, or as here, by a criminal prosecution, either being an action to enforce penalties for the violation of a statute. The court is of the opinion that the wrong here complained of is not *malum in se,* but rather *malum prohibition,* one peculiarly of an economic nature and one in which the attainment of a proper understanding between the parties is of itself a desirable end.

"The suggested disposition of this case upon a basis which has been discussed between the parties, subject to the approval of the court, was presented to this court recently. The court, especially in the light of the facts developed in the "first" case, from the discussions with counsel for the government and the defendants, and from a study of this indictment, is familiar with what is here involved.

"Realizing the solemn responsibility of the court, one which cannot be shared or delegated, I have come to the conclusion that the disposition of this case, as recommended by the government, is, under all the circumstances, fair and in the public interest, and one which this court should and therefore does approve."

Court refuses Detroit "gas crime" warrants

Warrants against unnamed persons charged with "crimes and misdemeanors" as a result of a recent one-man grand jury investigation into natural gas made by Judge Ralph W. Liddy of Common Pleas Court in Detroit were refused May 31 by Judge George Murphy, of Recorder's Court, on the ground that he was without jurisdiction. Judge Liddy, the Recorder's Court held, was the only person holding jurisdiction in the case.

The warrants were sought by Wayne County Prosecutor McCrea, who said he believed Judge Liddy was without jurisdiction to issue the warrants.

"This court has been presented by the prosecuting attorney with a proposed complaint and warrant charging the commission of a criminal offense within the territorial limits of the city of Detroit," Judge Murphy said. "The prosecuting attorney seeks to have the process of this court issued so that the individuals accused in said proposed complaint may be apprehended.

"The grand jury proceedings are, by the statutes of the state, deemed to be secret. Action can only be taken thereon by the court conducting such proceedings. No one who has heard the testimony taken therein can disclose the same, and, in the opinion of this court, it is without jurisdiction to employ the grand jury proceedings had before another tribunal as a basis for the issuance of criminal process."

Oil at the Capitols

Prospects for both Nye and Gillette acts passing negligible as Congress plans to adjourn shortly

Congress may adjourn by June 11

With Congress apparently headed for a June 11 adjournment, chances for the enactment of oil legislation this year are negligible.

The Nye resolution providing for federal seizure of California's off-shore oil fields appears to be shelved for the session as a result of bitter protests by the California delegation.

The Gillette bill for the divorce of marketing from other branches of the industry also appears to have been stalemated as a result of the refusal of the attorney general to hazard an opinion as to its constitutionality.

Belatedly awakening to potentialities of the Nye resolution, which slipped through the Senate last year without difficulty, the California delegation in the House is exerting every effort to prevent its consideration this year, and are hopeful of sidetracking it through the introduction of a bill by Representative John F. Dockweiler of Los Angeles, declaring title to the off-shore lands to rest in the State of California.

The resolution, after considerable maneuvering, was reported favorably by the House Judiciary Committee last month and an application for a rule enabling it to be brought up for consideration is pending with the House Rules Committee.

If the measure is brought up for consideration, an effort will be made to have the Dockweiler bill substituted as an amendment for provisions which would, it is claimed by opponents, be the entering wedge for the possible seizure by the government of deposits of oil, iron, copper or other minerals

deemed essential to national defense wherever located.

"The resolution is indefensible," it was declared May 31 by Senator William G. McAdoo of California, "and I am confident it will never pass in this session of Congress. It is an invasion of the rights and sovereignty of the State of California and of its political subdivisions and of any of its citizens who may have lawfully acquired concessions within the 3-mile limit."

Some 80 companies are reported to be producing oil or drilling along the California coast and, should the measure be passed, the Federal government undoubtedly would act speedily to halt these operations.

In reporting the resolution to the House, the committee claimed authority by the government to assume title to the oil as an exercise of constitutional powers to "provide and maintain a navy" and to "regulate commerce with foreign nations and among the several states."

Gillette Bill Tied Up

The Gillette divorce bill, recently the subject of lengthy hearings, has been tied up in the Senate Judiciary Committee for some weeks. The question of the constitutionality of legislation prohibiting an individual or concern from engaging in one branch of business simply because it happened also to be engaged in some other branch of the same business was raised by members of the committee during the hearings and the attorney general was asked to submit an opinion, which he refused to do.

California fighting Nye resolution

More than $1,000,000 per year from oil royalties, which benefit relief funds, state old age pension plan and revenues to schools, will be lost to the State of California, if the government succeeds in its move to acquire title to oil produced from the various tidelands pools, according to David R. Faries, president of the California Tidelands Association.

The Nye resolution claiming California tidelands for the federal government was declared to be an affront to the people of the state, by Governor Merriam, in a telegram to Hatton W. Sumners, chairman of the House Judiciary Committee, in which he said: "California is thoroughly aroused at the action taken by the committee on the judiciary as being an invasion of the sovereignty of the state by the federal government."

California Delegates

California officials now in Washington opposing the Nye resolution, Faries said, are of the opinion that it is but the beginning of an encroachment on states' rights which, if successful, will continue until no state is sure of its position with respect to future summary action by Washington. The California delegation at Washington consists of Rush M. Blodget, Carl Sturzenacker, Webb Shadle, Percy Heckendrof, George Trammel, and was sent east after a meeting of more than 100 state, city and county officials. The delegation is

[*Continued on page 68*]

Allowable Picture

Six leading states have fixed allowables totaling 11 percent below Bureau of Mines quota . . . Pipe line proration resumed by Carter Oil in Oklahoma

June allowables promise crude storage decrease

Remarkably drastic curtailment of crude oil production is scheduled for June, under the allowables adopted in the leading producing states.

The six foremost states, producing about 91 percent of the national crude oil output, have aggregate June allowables of 332,012 barrels a day, or 11 percent, less than the indicated current market demand, as estimated by the Bureau of Mines.

The bureau simply recognizes prevailing and prospective demand, takes into consideration probable refinery runs, and arrives at estimates of the total quantities of crude likely to be required.

Stocks Still High

But at present, stocks of crude oil and gasoline in storage are considered excessive, and efforts are being made to hold crude oil production sufficiently below the current actual market demand to permit substantial withdrawals from storage.

This is the explanation of the action of the states in ordering the unusually low allowables for June.

Similar emergency curtailment prevailed in the latter half of May and resulted in substantial reductions of the crude stocks.

The official allowables, by states, for June, are presented in an accompanying table, which also embodies comparisons of the state allowables with the Bureau of Mines estimates of market demand.

Kansas keeps same allowable for June

June allowable for Kansas was set at 160,000 barrels daily, identical with the figure for May. Estimated demand for Kansas crude oil in June was figured at 172,300 barrels daily by the United States Bureau of Mines.

An announcement by E. R. Sloan, chairman of the State Corporation Commission contained both a plea and a threat concerning pipe line proration, still effective by purchasers of Kansas crude oil. It was:

"If any purchaser is unable to secure his full market requirements under this allowable the commission will endeavor to see that his needs are met.

"It is the commission's purpose that every barrel of oil which can be produced and sold without creating waste or inequities between the various producers and land owners be produced and sold: and that in the production and sale of the full market requirements that the lease owners, royalty owners and land owners be dealt with fairly so as not to cause discrimination and drainage."

Concerns whose purchases are below allowable figures have been cited to appear before the commission to show cause for continuation of these practices.

Oklahoma allowable left at 405,000 barrels

Oklahoma daily allowable was set at 405,000 barrels daily by Oklahoma Corporation Commission June 1. The total is identical with the emergency order

State Allowables for June Lower Than Bureau of Mines Recommendation

STATE	Bureau of Mines Recommendation	State Allowable Beginning of Month	Excess or Deficiency of State Allowable	Percent Excess or Deficiency
California	650,000	*620,000	—30,000	— 4.6
Kansas	172,300	160,000	—12,300	— 7.1
Louisiana	250,000	250,475	+475	+0.19
New Mexico	108,300	91,000	—17,300	—15.9
Oklahoma	508,300	405,000	—103,300	—20.2
Texas	1,329,300	†1,159,713	—169,587	—12.7
Total six States	3,018,200	2,686,188	—332,012	—11.0
Other States	315,100	.....	.....	.....
Total United States	3,333,300	.....	.....	.....

* Recommendation of Central Committee of California Oil Producers.
† Average daily production permitted for 7 day week as a whole; actual daily allowable higher, but fields shut-in on Saturdays and Sundays.

of May 10 and 17,742 barrels lower than the average for May.

Class A pools, the Oklahoma City Wilcox, was given allowable of 7.25 of its potential with minimum well allowable of 190 barrels daily to bring field reduction from 79,434 barrels daily to 76,100 barrels.

Class B pools were given 70 percent of January pipe line runs to reduce the total from 103,706 barrels daily to 99,353 barrels.

Class C pools, which include Fitts, were given percentage reductions calculated to reduce daily output from 44,719 barrels daily to 42,842 barrels.

Class D, wildcat pools, were given maximum well allowable of 62 barrels to reduce the daily output from 11,521 barrels daily to 11,085 barrels.

Prorated but unclassified pools were reduced from 42,712 barrels daily to 40,918 barrels.

Stripper well pools were given 85 percent of average January pipe line runs, calculated to reduce daily output from 140,600 barrels daily to 134,702 barrels.

Carter resumes Oklahoma pipe line proration

Due to further loss of market Carter Oil Company June 1 resumed pipe line proration in Oklahoma. The statement by J. J. Conry, president, was:

"Until further notice Carter Oil Company will take through facilities of Oklahoma Pipe Line Company 80 percent of the quantity of crude designated as allowable production under the order of the Oklahoma State Corporation Commission, which provides for a total allowable of 405,000 barrels daily."

The restriction does not apply to the Oklahoma City field, where the company has been relieved of surplus crude by other purchasers. In the stripper well area, the company will take 80 percent of the quantity purchased during May. In the Tussy and Wildcat Jim pools, Southern Oklahoma, its purchases will be restricted to not more than 10 barrels per well averaged on a lease basis. This is equal to purchases by nearby refineries."

Californians encouraged by lower production output

With a 10-day holiday production period underway in the Lakeview field, and every indication pointing toward continued voluntary cooperation in the state's curtailment program, California oil producers are not as jittery now as they were 30 days ago.

An unexpected impulse to curtail production probably saved the industry from crude price cuts during May, but producers are still faced with the need for getting daily output down another 50,000 barrels to afford a margin of safety from price cutting.

Additional Cuts Needed

Authorities on marketing conditions say that more than balancing of production and consumption will be necessary during the summer months, so that considerable storage may be emptied to make room for crude which of necessity will have to be run to storage in the fall when demand drops.

During the past 30 days curtailment at Wilmington and Long Beach Harbor has been remarkably successful. Fortunately, the production situation has not been aggravated by new fields found on the floor of the San Joaquin Valley. The reason for this is the willingness of the major companies to develop on an orderly plan that will prevent competitive drilling campaigns, and the fact that the larger firms control the bulk of acreage in such fields as Wasco, Ten Section, Rio Bravo, Canal and Greeley.

Issue order for revising Texas allowable June 16

The Texas Railroad Commission has issued an order effecting the policy it announced earlier this month of revising proration schedules in all Texas oil fields. The order is set out in full below:

"Whereas, on May 17, 1938, after due notice, a hearing was held in the Stephen F. Austin Hotel in the city of Austin, Texas, for the purpose of hearing evidence on the question of waste of crude oil and natural gas in the state of Texas; and for the further purpose of determining the market demand for crude oil for the month of June, 1938; and

"Whereas, after an extended hearing where evidence was submitted as to the conditions of the fields and the market demand, the commission finds that the allocation to the various fields in the state of Texas and the allocation between the wells and leases in the fields shall be as set out in the attached schedule marked 'Exhibit A'; and

Means Reduction

"Whereas, the commission finds that the allowable of many fields has increased excessively due to the large amount of drilling in those particular fields, which makes necessary material reductions in the allowable of the state to conform to market demand; and

"Whereas, heretofore new wells have been allowed their allowables on the same basis as any other well in the same field, which has resulted in increases to the basic allowable in the proportion that new wells have been completed in a particular field; and

"Whereas, the commission now finds that an adjustment should be made on June 16, 1938, in order to prevent excessive accruals to the basic allowable for the state of Texas issued, effective June 1, 1938:

"Therefore, be it ordered by the Railroad Commission of Texas, that the attached proration schedule marked 'Exhibit A' be and the same is hereby adopted, and shall be in force and effect, beginning 7 a.m., June 1, 1938, and ending 7 a.m., June 16, 1938, at which time the accrued allowable of each field in the state will be adjusted to conform to the basic allowable of June 1, 1938."

Texas hearing is set for June 20

The Texas Railroad Commission has announced that the next statewide proration hearing will be held in Austin on June 20.

Since the commission has installed its program of readjusting all allowables on the 16th of the month to maintain top allowables fixed by statewide orders, it is likely that some operators will seek increases to offset this adjustment program. Commissioner Ernest O. Thompson said he expected no unusual features at the hearing.

Texas gas order for June issued

The Texas Railroad Commission has issued its June gas proration order. The allowable for the Rodessa field was fixed at 49,417,000 cubic feet daily. The allowable for sour gas in the West Panhandle field was fixed at 678,572,000 cubic feet daily and for the sweet gas in the East Panhandle field at 133,111,000 cubic feet per day.

Michigan gas rule hearing June 9

Proposed revision of regulations governing operation of Michigan natural gas wells will be the subject of a hearing called for June 9 by P. J. Hoffmaster, director of the state conservation department. Among matters to be considered will be safety measures, methods of drilling, location of wells in relation to boundary lines, and regulation of liability bonds for drillers.

Thompson encouraged by present outlook

Improved conditions in the oil industry were quoted by Texas Railroad Commissioner Ernest O. Thompson last week. While the picture is brighter, Thompson insisted that the business is not yet out of the woods. His statement in full appears below:

"The present outlook of the petroleum industry is encouraging, and the strict curtailment policies initiated by the commission shortly after the first of the year are beginning to show definite results.

"Stocks of crude petroleum were reduced 1,550,000 barrels during the week ended May 15, 1938; and at this point stocks of crude have been reduced to 304,198,000 barrels as compared with 305,365,000 barrels a year ago.

"Gasoline stocks are likewise down for the week ended May 21, 1938, but they are still approximately 10 percent higher than at this time last year.

"Three weeks ago the outlook was decidedly unfavorable; and the prompt and decisive measures adopted by the railroad commission were necessary to meet this serious condition.

Lower Allowables Helped

"The intelligent cooperation which the oil ooperators of Texas have given the commission in its efforts to meet this emergency, and the reduction in allowables in Oklahoma, Kansas, New Mexico, Arkansas and California, have contributed effectively to maintaining the stability of the oil industry.

"Our optimism must be tempered with reserve, however. Gasoline stocks are still uncomfortably high, and gas

[*Continued on page 68*]

Pipe Line News

A 290-mile South American line from Barco to the Caribbean Sea longest of several projects started.

Barco line to be of 12-inch diameter

Right-of-way clearing has started on South American Gulf Oil Company's 290-mile 12-inch line from the Barco Concession in Colombia to Covenas, about 80 miles south of Cartagena and on the Caribbean sea. South American Gulf, jointly owned by The Texas Company and Socony Vacuum Oil Corporation, estimates the line will cost from $10,000,000 to $15,000,000 and will require from 18 months to two years for construction.

While only a portion of the right-of-way has been cleared, additional equipment for speeding up this phase of the work and for road building is scheduled to be shipped from the United States June 10, with actual electric welding, sub-contracted to Brown Welding Company of San Francisco, scheduled to start July 15. General contract for building the line has been awarded to Lindgren and Swinnerton of San Francisco, according to Bert Hull executive head of The Texas Pipe Line Company.

Hull's organization in Houston is now busying itself with conditioning 200 men in Texas for duty on the project. In addition, it is estimated about 800 native laborers will be employed to rush the line to completion.

Route of Line

Route of the line will be from the concession west to La Gloria, on the Magdalena River, which the line of Andian Pipe Line Company from Infantas field to Cartagena parallels. Thence it will run west to Covenas. On the way from the concession to La Gloria, which will be operating headquarters for South American Gulf during construction, the line will have to go through Bobali Pass. This pass has an elevation estimated at from 4000 to 5000 feet. It is the gateway over the Andes from the interior of Colombia to the seacoast and separates the Sierrania de los Motilones and the Sierra de Preija from Sierra de Ocana ranges. The last 140 miles of the line connecting La Gloria with tidewater will handle the oil by gravity flow.

Part of the route taken by the line will travel through the country inhabited by the Motilone Indians, said to be one of the most hostile tribes in existence, one that has successfully withstood all overtures of the white man. Armed guards and dogs will be used to protect the workers from the arrows of the Motilones.

C. S. Atwell of New York has general direction of construction of the line. His Colombian headquarters is at Barranquilla, at the mouth of the Magdalena River.

Production of oil on the 200,000-hectare Barco Concession has steadily increased since completion of the first well by the present owners. Shut-in production of the concession February 7 was 14,000 barrels daily, just 9000 barrels shy of the figure calling for construction of the line, according to terms of the concession. Six wells, two of them dry, were drilled on the concession in 1937. Both the dry holes were wildcats, but enough was found out to cause South American Gulf Oil Company to launch a 50-well drilling program for 1938. The drilling is being done by Colombian Petroleum Company, a subsidiary. Eleven rigs are on the job.

So far there are only two fields on the concession, but the Colombian Petroleum Company, in whose name the grant is held, has slightly more than three years in which to complete selection of acreage. Thus far five tracts totaling about 70,000 hectares have been chosen. (One hectare equals 2.47 acres.)

Rio de Oro, one of the fields, produces from Eocene. The oil is 37 gravity and clean, with a negligible amount of paraffin. The deepest producing well in the field only goes down to 1615 feet.

La Petrolea field, the other field, is said to be the only one in the northern part of South America yielding Cretaceous oil. It has no true sands but produces from limestone formation comparable in a general way to those of the famous Golden Lane fields in Mexico. It has three productive zones, ranging in depth from 400 to 1602 feet, yielding oil ranging in gravity from 40 to 47 degrees.

Construction of the line means that Barco production, now shut-in, probably amounts to around 23,000 barrels per day or more, as the Chaux-Folsom contract, the official name of the concession grant in Colombian law, provided that the line must be started when production had reached 3000 metric tons daily.

Want to build line from Lance Creek to Denver

Permission to construct an oil pipe line from the Lance Creek field of Wyoming to Denver, Colorado, to cost an estimated $3,000,000, is sought in an application filed by the Celebur Corporation with the Colorado public utilities commission. Two possible routes were suggested, one to run east of Greeley, Colorado, along Highway 85, and the other by way of Cheyenne, Wyoming, and Fort Collins, Colorado.

Seek permission to cross Ohio river

Permission of the War Department is being sought by Standard Oil Company of Ohio to law two 6-inch pipe lines across the Maumee River at Toledo, connecting the Standard company's refinery on the east side to the

Labor Situation

Sporadic fighting at Pure's Muskogee refinery has ceased, although 100 workers continue on the job.

Mediation of strike at Pure Muskogee refinery sought

More than 100 workers in the strike-bound Pure Oil Company's refinery at Muskogee, Oklahoma, remained at their jobs last week, while mediators sought to end a labor dispute that brought injury to a score of persons. Non-strikers stayed inside the plant overnight at the request of a civic committee, despite an armistice and a pledge of safe conduct through picket lines by C. H. Youngblood, president of the local chapter of the C.I.O. affiliated oil workers.

Shortly after the strike was called 10 days ago sporadic fighting between workers and union members took place. Several workers and two women were injured when pickets and workers clashed while changing shifts. However, later in the week strikers resumed peaceful picketing and non-strikers passed through the lines unmolested.

The union called a walkout more than a week ago, charging the company disregarded seniority and discriminated against the union in failing to reemploy union members. The refinery was opened May 2 after a four-months shutdown, and since that date the company has been carrying on curtailed operations.

Hearing is concluded on Pennsylvania 44-hour week

Pennsylvania's supreme court last week concluded its hearing on the state's 44-hour week law, clearing the way for a ruling on its constitutionality which may be forthcoming this month. During the hearing, several justices openly criticized the power delegated to the secretary of labor and industry by the legislature to grant variations to certain industries.

Passed by the 1937 legislature and to have become effective December 1, 1937, the law has been in the courts for the past six months. It had been found unconstitutional by the Dauphin County Court and the supreme court hearing was on the state's appeal. Operators of Pennsylvania stripper wells would be greatly affected if the law is upheld.

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bulk station of Shell Petroleum Corporation 100 feet upstream from the Wheeling and Lake Erie bridge. The lines would be placed in a single trench below the existing bottom of the river so that they are at least 30 feet below the 570.5-foot low water datum point. They would be for the movement of both gasoline and crude.

Shell Petroleum Corporation has a line running from Indianapolis, Indiana, to Lima, Ohio. The Standard company contemplates construction of a new line from Lima to Fostoria, Ohio, which would provide a link between the company's existing line from Fostoria and Toledo. The entire project would permit movement of gasoline or crude from Indianapolis to the Toledo refinery of the Standard company, and then by special lines to the Shell bulk plant in the latter city.

Shell puts new gasoline line in operation

Shell Petroleum Corporation's new $5,000,000 gasoline pipe line running from Wood River, Illinois, east of St. Louis, through Effingham, Illinois, and Terre Haute, Indiana, to Indianapolis, has been placed in operation.

The company has also announced construction of a 6-inch gasoline pipe line from Lima, Ohio, to Toledo, and erection of four storage tanks with a capacity of 1,000,000 gallons. Construction work is to start this month and total estimated cost is $500,000.

Survey 18-mile gas line from El Dorado to Schuler

Survey of a right-of-way from Schuler field to El Dorado, for a proposed 18-mile 6-inch gas line has been completed by Arkansas-Louisiana Gas Company. The new line will tie in with an existing system to the field and is necessary to supply a need for additional gas for drilling, repressuring and other lease operations.

80-mile gathering system for K-M-A

Continental Oil Company will start immediately laying about 80 miles of gathering lines to supply the one main, and two auxiliary, casinghead gasoline plants to be erected in the K-M-A field of North Texas. The main plant will be of compression type, with capacity of 15,000,000 cubic feet of gas daily. A repressuring unit will be installed so the residue gas may be returned to the leases.

Laying six-inch line

Owensboro Pipe Line Corporation is constructing a new six-inch pipe line from the Centralia field, on the Clinton-Marion County line, Illinois, north to Sandoval, a distance of six miles, where it will connect with the Illinois Pipe Line Company's branch line running into the basin area. Completion of the line is expected to bring an increase in the allowable for Centralia field wells, now held to 40 barrels per day.

Market Situation

Strict production curtailment improves the stock situation and brings encouragement . . . Refiners need to retard operations . . . Prices unchanged.

Situation continues good as curtailment prevails

The oil industry's markets continue comparatively stable. Prices are holding steady, in general, and gasoline quotations show some indications that they may advance somewhat.

Meanwhile, drastic curtailment of crude oil production and fairly satisfactory restriction of refinery operations continue, giving promise that the markets may remain firm in coming weeks.

Statistical Situation

The statistical situation of the industry still is partially favorable and partially unfavorable. The producing division is showing relatively good conditions, but the refining division is failing to demonstrate adequate self-restraint.

Crude oil production has been brought down to exceptionally low levels, under the prevailing strict allowables, the output in the week ended May 28 having been 13.3 percent lower than in the corresponding week last year.

Crude stocks have been declining consistently in recent weeks, with production curtailed, and they now are a little lower than one year ago.

Gasoline Stocks High

The gasoline situation continues an unfavorable factor, as progress in reducing excessive inventories has been disappointing. The stocks came down only slightly in the latest week on which reports are available, and they remain more than 10 percent higher than one year previously, although demand is smaller than a year ago.

Fuel oil stocks are even more excessive, and they continue to increase sharply.

Refiners fail to curtail as much as producers

The latest available statistics indicate that the producing division of the industry is effectively curtailing operations in line with current economic requirements but that the refining division is not adequately holding down its activity.

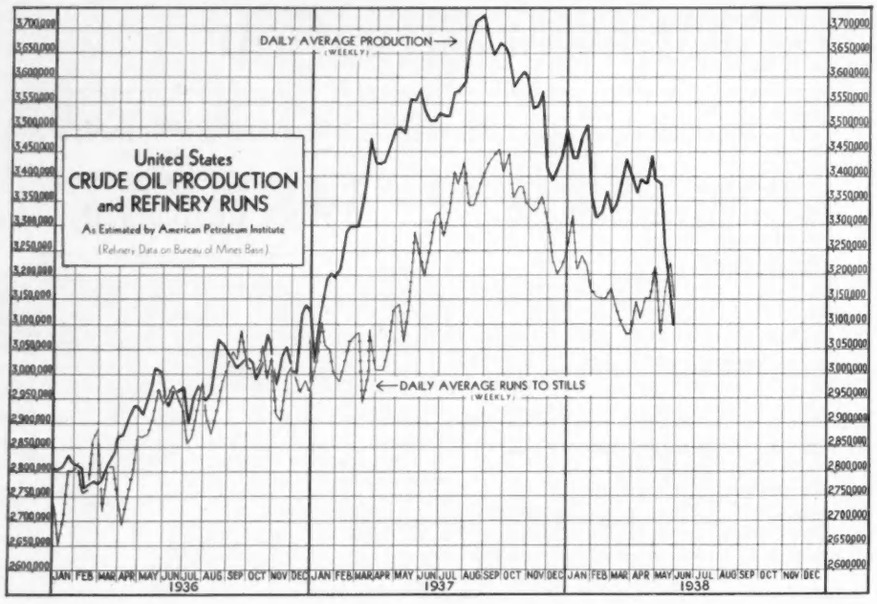
This situation represents a continua-

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
April 24, 1937	3,496,400	3,125,000	300,737,000	82,303,000	94,100,000
May 29	3,573,000	3,245,000	306,445,000	78,758,000	96,139,000
June 26	3,529,600	3,235,000	307,679,000	75,427,000	100,395,000
July 31	3,591,900	3,425,000	308,250,000	70,872,000	108,209,000
August 29	*3,731,450	3,425,000	309,506,000	66,997,000	112,111,000
September 25	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
October 2	3,647,450	3,400,000	309,036,000	65,266,000	117,076,000
October 30	3,602,950	3,345,000	307,140,000	66,836,000	121,070,000
November 27	3,425,800	3,325,000	304,156,000	68,544,000	121,616,000
December 25	3,492,600	3,245,000	303,294,000	74,437,000	118,659,000
January 1, 1938	3,436,600	3,320,000	303,468,000	77,291,000	118,660,000
January 29	3,357,650	3,170,000	304,286,000	84,844,000	118,793,000
February 26	3,322,800	3,170,000	305,167,000	90,719,000	120,958,000
March 19	3,322,550	3,080,000	306,380,000	*93,192,000	122,067,000
March 26	3,405,600	3,080,000	307,557,000	92,858,000	122,979,000
April 30	3,396,150	3,215,000	307,147,000	91,339,000	128,270,000
May 7	3,382,350	3,080,000	305,748,000	89,464,000	129,848,000
May 14	3,362,300	3,170,000	304,198,000	88,647,000	130,250,000
May 21	3,175,750	3,225,000	302,597,000	88,193,000	132,113,000
May 28, 1938	3,098,650	3,150,000	.....	87,946,000	134,315,000
May 29, 1937	3,573,700	3,245,000	†304,971,000	79,498,000	96,223,000
Change in past year	—13.3%	—2.9%	—0.7%	+10.6%	+39.6%

* All time peak. † Stocks, May 22, 1937.



tion of conditions that have prevailed for several weeks.

Crude Production Down

Crude oil production declined further in the week ended May 28, under the influence of the emergency, low allowables of late May. The output of 3,098,650 barrels daily during the week was 77,100 barrels a day lower than in the previous week and 13.3 percent below the production one year previously.

Crude Stocks Lower

The drastic curtailment of crude oil production in recent weeks, coupled with the fact that refinery runs of crude have remained comparatively high, has caused steady withdrawals from crude storage. The stocks of crude in the United States decreased 1,601,000 barrels more in the week ended May 21, coming down to 302,597,000 barrels. At the new level, they were 7/10 of 1 percent lower than on the comparable date last year.

The crude oil stocks have been steadily and sharply declining since the beginning of May, at which time they totaled 307,147,000 barrels.

Refinery Runs Down

Refinery runs in the week ended May 28 were higher than in some recent weeks but 75,000 barrels a day lower than in the immediately preceding week, averaging 3,150,000 barrels daily. At this level, the runs were 2.9 percent lower than in the comparable week last year.

Gasoline Stocks Decline

Gasoline stocks failed to decline as much as desirable in the week ended May 28, dropping only 247,000 barrels, to a new level of 87,946,000 barrels. They then were 10.6 percent larger than one year previously. Gasoline demand, meanwhile, is slightly lower than last year.

The gasoline stocks normally decline steadily at this time of the year, under the influence of seasonally increasing consumption, and even larger than normal withdrawals from storage are considered advisable currently, in view of the excessive inventories on hand.

Fuel Oil Stocks

Stocks of gas and fuel oil became further excessive in the week ended May 28, increasing 2,202,000 barrels, to a new total of 134,315,000 barrels. They then stood 39.6 percent above the level of one year previously. Yet the demand for fuel oil is running substantially lower this year than last year.

Prices are steady at former levels

Prices of both crude oil and refined products remain generally steady at unchanged levels, and a continuation of stable markets is promised.

The crude markets are being bolstered by the strict curtailment of production, and the markets for refined oils also reflect the crude control and the relatively low levels of refinery activity.

Gasoline prices continue firm, and are showing some further tendency to advance, although no general upward movement has yet occurred.

Kerosene and tractor fuel are in good demand, in anticipation of the wheat harvesting season, and prices are steady.

The fuel oils still are in relatively light demand, although heavy fuels are feeling increased railroad buying, in preparation for wheat harvest traffic. Prices are mostly unchanged.

Lubricants are under some pressure, but prices are holding.

Natural Gasoline

Natural gasoline, grade 26-70, was priced generally in the Mid-Continent markets f.o.b. refineries at 2⅛ cents a gallon, and sales were reported at 2 to 2⅛ cents f.o.b. Breckenridge, Texas.

Gasoline at Refineries

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below, 4¼ to 4½ cents a gallon; 63 to 66 octane, 4½ to 4⅝ cents; 67 to 69 octane, 4¾ to 5 cents; 70 to 72 octane, 5 to 5½ cents.

Corresponding prices in the Chicago markets were: 4⅛ to 4⅜ cents, 4⅜ to 4⅝ cents, 4⅝ to 4⅞ cents, and 4⅝ to 5⅛ cents.

In East Texas the most common gasoline, 60-62. 400 end point, was priced generally around 4½ cents a gallon.

Kerosene prices f.o.b. Oklahoma refineries ranged from 4⅛ to 4¼ cents a gallon for the 41-43 water white grade, and from 4⅜ to 4½ cents for the 43-44 water white grade; and corresponding prices in the Chicago market were 4 to 4¼ cents and 4⅛ to 4½ cents.

Fuel Oils Steady

Fuel oil prices were generally the same as in the previous week. In the Chicago market range oil was priced from 3¾ to 3⅞ cents a gallon. The No. 1 white oil was priced from 3⅝ to 3⅞ cents and No. 1 straw from 3⅜ to 3¾ cents. No. 2 straw was 3¼ to 3½ cents. No. 3 oil was 3⅛ to 3¼ cents. No. 4 was $1.05 to $1.10 a barrel to domestic consumers and 90 cents to $1.05 to industrial buyers. No. 5 oils were 65 to 75 cents for domestic and 55 to 65 cents for industrial sales. The No. 6 oil was quoted to the usual industrial customers at 35 to 50 cents a barrel.

Kentucky crude cut

Fordsville Gathering Line, Incorporated, purchaser of crude in the new Birk City pool of Henderson County, Kentucky, on May 29 reduced the price of crude in that area from $1.40 to $1.35 a barrel. No announcement was made by the Aetna Oil Service, Incorporated, the only other purchaser in the Birk City pool, as to whether a similar reduction would be made, nor were any price reductions made in other sections of the Owensboro region.

Production of the Birk City pool, opened a month ago, is about 1500 barrels daily. The Fordsville company is taking the greater part of production, piping it to Stanley, in adjoining Daviess County, and moving it by tank cars to a refinery at Latonia, Kentucky. Aetna Oil Service is moving the crude by river barge to Louisville.

Atlantic plans $28,000,000 expansion program

An expansion and development program requiring capital expenditures of $28,000,000, to be undertaken by The Atlantic Refining Company during 1938, is announced by J. W. Van Dyke, chair-

Crude Oil Prices
For fields and districts appear on pages 66 and 68.

man of the board. The amount involved will average in excess of $2000 for each man and woman now on the company's payroll.

The program will cover acquirement of additional properties in oil producing areas to increase the company's production of crude oil; marketing activities; improvement of operations at the company's large refineries at Philadelphia and Atreco, Texas; and additions to the tanker fleet.

"Such capital expenditures illustrate the vital part played in the functioning of our economic system by the investment of capital in productive enterprises," says Van Dyke. "Through these expenditures we expect to reduce costs and bring operations into more complete balance. Only through the improvement and expansion of operations made possible by such capital expenditures is it possible to safeguard and create employment, maintain low costs to the consumer, and provide for a fair return to the individual investor."

Capital expenditures by The Atlantic Refining Company in 1936 and 1937 totaled $52,669,000.

Illinois crude cut

Owensboro Pipe Line Corporation last week announced a cut in the crude price posted for the Centralia field, on the Clinton-Marion County line, Illinois, from $1.35 to $1.25 a barrel. The price change was accompanied by an upward revision of the daily allowable from 30 to 40 barrels per well.

Crude Production

Drop of 30,890 barrels daily average brings output to 3,086,135 barrels; well below federal estimate.

THE first week in June showed a further decline in United States crude oil production when the daily output averaged 3,086,135 barrels daily. Although output of most of the principal producing states exceeded the strict state allowable for June, production during the past few weeks has been brought close in line with present market requirements. The decline in daily production during the week amounted to 30,890 barrels daily. The Bureau of Mines estimate of demand for June exceeded the past week's daily output by 247,165 barrels.

With the exception of Louisiana, all important producing states showed a further drop in production during the week ended June 4. Oklahoma headed the states, followed by California, Texas and Kansas.

Louisiana registered an increase of 950 barrels, having averaged 255,200 barrels a day. That was 5200 barrels more than the Bureau of Mines recommendation and 4725 barrels more than the allowable prescribed by the state.

Oklahoma was down 10,200 barrels, the daily output having been 429,400 barrels. Exceeding the state allowable by 24,400 barrels a day, this was 78,900 barrels under the Bureau of Mines estimate.

California showed a decline of 4300 barrels daily, averaging 672,900 barrels, which was 22,900 barrels more than the federal allocation and 52,900 more than the recommendation of the Central Committee of California Oil Producers.

Texas registered a decrease of 7400 barrels, having averaged 1,192,250 barrels a day. That was 137,050 barrels less than the federal government suggestion and 32,537 barrels more than the allowable prescribed by the state for June.

Kansas last week averaged 142,285 barrels daily, 1265 less than in the previous week, 30,015 barrels less than the Bureau of Mines recommendation and 17,715 barrels less than the state allowable.

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in June)	State Allowable in June	BARRELS DAILY FOR WEEK ENDED June 4	BARRELS DAILY FOR WEEK ENDED May 28
TEXAS—				
Texas Panhandle	.....	.....	66,100	67,050
North Texas	.....	.....	73,400	72,800
West Central Texas	.....	.....	28,050	27,100
West Texas	.....	.....	178,100	178,200
East Central Texas	.....	.....	93,200	95,300
East Texas Field	.....	.....	364,500	368,400
South Texas	.....	.....	204,100	205,600
Texas Gulf Coast	.....	.....	184,800	185,200
Total Texas	1,329,300	1,159,713†	1,192,250	1,199,650
CALIFORNIA—				
Long Beach	.....	.....	57,700	58,600
Santa Fe Springs	.....	.....	35,800	35,000
Huntington Beach	.....	.....	34,600	32,800
Dominguez	.....	.....	27,700	27,500
Ventura Avenue	.....	.....	35,400	37,000
Midway-Sunset	.....	.....	53,800	70,200
Kettleman Hills	.....	.....	72,600	68,800
Wilmington	.....	.....	91,000	91,600
Others	.....	.....	264,300	255,700
Total California	650,000	620,000*	672,900	677,200
OKLAHOMA—				
Oklahoma City	.....	.....	89,125	92,050
Seminole Area	.....	.....	90,100	91,225
Fitts	.....	.....	41,200	42,225
Others	.....	.....	208,975	214,100
Total Oklahoma	508,300	405,000	429,400	439,600
LOUISIANA—				
North Louisiana	.....	.....	79,300	78,450
South Louisiana	.....	.....	176,100	175,800
Total Louisiana	250,000	250,475	255,400	254,250
KANSAS—				
Burrton-Haven	.....	.....	9,950	9,975
Russell County	.....	.....	21,230	21,075
Silica	.....	.....	9,130	9,325
Others	.....	.....	101,975	103,175
Total Kansas	172,300	160,000	142,285	143,550
NEW MEXICO	108,300	91,000	91,200	97,900
MICHIGAN	54,000	.....	51,800	49,600
ARKANSAS	48,300	.....	42,150	41,525
MOUNTAIN STATES—				
Wyoming	49,700	.....	51,050	49,600
Montana	12,700	.....	13,200	13,450
Colorado	5,000	.....	3,750	3,500
Total Mountain States	67,400	.....	68,000	66,550
EASTERN STATES—				
Pennsylvania Grade	.....	.....	75,600	76,300
Southern Illinois (New Pools)	.....	.....	28,900	29,100
Illinois-Indiana (Old Pools)	.....	.....	12,450	12,650
Others, Eastern	.....	.....	23,800	24,450
Total Eastern States	145,400	.....	140,750	142,500
Total United States	3,333,300	.....	3,086,135	3,117,025

† Daily average, considering Saturday and Sunday shut-downs.

* Recommendation of Central Committee of California Oil Producers.

CRUDE OIL PRICE SCHEDULES

(Figures Revised to June 2, 1938)

MID-CONTINENT GRAVITY SCALE PRICES (Posted January 28, 1937)

(Some fields of Mid-Continent have flat price postings, and are shown separately)

Gravity	Okla.-Kans.	North La.-Ark.	Rodessa, La.-Tex.	North & W. Cent. Tex.	East Cent. Tex.	Gray Co. Tex.	Carson Hutchinson Co. Tex.	[1]Conroe Tex. Type	West Tex.-N. Mex.	[2]Gulf Coast (Tex.-La.)	[3]Some La. Gulf Areas	[4]Anahauc, Tex. Type	[5]Refugio, Tex. Type	[6]Mirando, Tex. Type
17–17.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	*$0.90	.....	.....	.....
18–18.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.92	.....	.....	.....
19–19.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.94	.....	.....	.....
20–20.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	*$0.95	.96	.....	*$1.01	*$0.96
21–21.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.98	.98	.....	1.03	.98
22–22.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.01	1.01	.....	1.05	1.00
23–23.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.04	1.04	.....	1.07	1.02
24–24.9	*$0.98	*$0.90	*$0.93	*$0.88	.....	.....	.....	.....	.....	1.07	1.07	.....	1.09	1.04
25–25.9	1.00	.92	.95	.90	.....	.....	.....	.....	*$0.78	1.10	1.10	.....	1.11	1.06
26–26.9	1.02	.94	.97	.92	.....	.....	.....	.....	.80	1.13	1.13	.....	1.13	1.08
27–27.9	1.04	.96	.99	.94	.....	.....	.....	.....	.82	1.15	1.15	.....	1.15	1.10
28–28.9	1.06	.98	1.01	.96	*$1.03	.....	.....	*$1.20	.84	1.17	1.17	.....	1.17	1.12
29–29.9	1.08	1.00	1.03	.98	1.05	.....	.....	1.22	.86	1.19	1.19	.....	1.19	1.14
30–30.9	1.10	1.02	1.05	1.00	1.07	.....	.....	1.24	.88	1.21	1.21	$1.16	1.21	1.16
31–31.9	1.12	1.04	1.07	1.02	1.09	.....	.....	1.26	.90	1.23	1.23	1.18	1.23	1.18
32–32.9	1.14	1.06	1.09	1.04	1.11	.....	.....	1.28	.92	1.25	1.25	1.20	1.25	1.20
33–33.9	1.16	1.08	1.11	1.06	1.13	.....	.....	1.30	.94	1.27	1.27	1.22	1.27	1.22
34–34.9	1.18	1.10	1.13	1.08	1.15	*$0.96	*$0.91	1.32	.96	1.29	†1.29	1.24	1.29	1.24
35–35.9	1.20	1.12	1.15	1.10	1.17	.98	.93	1.34	.98	1.31	.....	1.26	1.31	1.26
36–36.9	1.22	1.14	1.17	1.12	1.19	1.00	.95	1.36	1.00	1.33	.....	1.28	1.33	1.28
37–37.9	1.24	1.16	1.19	1.14	1.21	1.02	.97	1.38	1.02	1.35	.....	1.30	1.35	1.30
38–38.9	1.26	1.18	1.21	1.16	1.23	1.04	.99	1.40	1.04	1.37	.....	1.32	1.37	1.32
39–39.9	1.28	1.20	1.23	1.18	1.25	1.06	1.01	1.42	1.06	1.39	.....	1.34	1.39	1.34
40 & Above	1.30	1.22	1.25	1.20	1.27	1.08	1.03	1.44	1.08	1.41	.....	1.36	1.41	1.36

* Minimum price and applies alsto to purchases of lower gravity.

[1] Conroe, Tomball, Satsuma, Raccooon Bend Deep fields.

[2] Upper Texas Gulf Coast, including Goose Creek, Spindle Top, etc., and some fields of Louisiana Gulf Coast, including Black Bayou, White Castle, Vinton, Hackberry, etc., except that top price for those Louisiana fields is $1.29 for 34 gravity and above.

[3] Choctaw, Darrow, Lockport, Iowa (Magnolia posting), Cameron Meadows, etc.

[4] Anahuac, Dickinson, Flour Bluff, Turtle Bay.

[5] Lower Texas Gulf Coast, including Refugio, Saxet, etc. Posted 7-6-37.

[6] Duval, Jim Hogg, Webb and Zapata Counties; Heyser, Placedo fields. Posted 7-6-37.

† Maximum price and applies also to purchases of higher gravity.

Mid-Continent Flat Prices

	Flat Price	Date Posted
Arkansas:		
Smackover	$0.90	1–28–37
Louisiana:		
Garden Island	1.37	1–28–37
Lafitte	1.24	1–28–37
Texas:		
East Texas	1.35	5–22–37
Talco	.73	1–28–37
Livingston, Cleveland	1.27	1–28–37
Hardin	1.15	1–28–37
Van	1.10	1–28–37
Pettus	1.37	1–28–37
Pecos County	.91	1–28–37
Pecos Shallow	.81	1–28–37
Luling	1.00	1–28–37
Lytton Springs	1.12	1–28–37
Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski	1.09	1–28–37

Michigan Prices

Central Michigan	$1.27	7–24–37

Middle West Prices

Lima, Ohio	$1.00	11–20–37
Illinois	1.35	1–28–37
Princeton	1.35	1–28–37
Western Kentucky	1.40	1–28–37

Rocky Mountain States Prices

	Flat Price	Date Posted
Colorado:		
Ft. Collins and Wellington, Light	$1.01	1–28–37
Ft. Collins and Wellington, Heavy	1.25	1–28–37
Cannon City and Florence	1.10	1–28–37
Iles, Light	1.18	1–28–37
Iles, Heavy	1.12	1–28–37
Montana:		
Cat Creek	1.30	1– 1–38
Cut Bank	1.35	6– 3–36
Pondera	1.05	9–29–33
Sunburst	.90	11–16–37
***New Mexico:**		
Hogback	1.33	1–28–37
Wyoming:		
Big Muddy	1.18	1–28–37
Elk Basin	1.30	1–28–37
Frannie, Light	.65	5– 1–38
Frannie, Heavy	.62	11– 4–36
Graybull-Torchlight	1.30	1–28–37
Grass Creek, Light	1.30	1–28–37
Grass Creek, Heavy	.50	5– 1–38
Hamilton Dome	.45	5– 1–38
Lance Creek	.97	1–28–37
Osage	1.30	1– 1–37
Rock Creek	1.20½	1–28–37
Salt Creek, Tensleep	.70	1– 6–38

* Also see Mid-Continent Gravity-Scale Schedule above.

Pennsylvania Prices

Bradford-Allegheny	$2.05	3– 7–38
National Transit Lines	1.98	3– 7–38
Sw. Pa. Pipe Line	1.71	3– 7–38
Eureka Pipe Line	1.65	3– 7–38
Buckeye Pipe Line	1.55	3– 7–38
Corning Grade	1.27	12– 1–37

Prices Outside United States

Canada:		
Petrolia	$2.10	9– 9–33
Oil Springs	2.17	9– 9–33
Mexico:		
F.O.B. Tampico; net; U. S. Currency, buyer pays tax	.85	Feb., 1938

Major Price Changes

	Penna. (Nat. Tr.)	Mid.-Cont. (36 Gr.)	Calif. (26 Gr.)
June 19,1933	Up 10	Up 19	.....
June 26, 1933	Up 10	.....	Up 9-12
July 6, 1933	Up 13	Up 10	.....
July 17, 1933	Up 15	.....	.....
July 28, 1933	Up 15	.....	.....
August 11, 1933	Up 10	.....	.....
August 24, 1933	.....	Up 10	.....
August 30, 1933	Up 15	.....	.....
September 6, 1933	Up 10	Up 10	Up 15
September 8, 1933	.....	Up 15	.....
May 1, 1934	Up 10	.....	.....
November 6, 1934	Cut 25	.....	.....
December 6, 1934	Cut 25	.....	.....
January 4, 1935	Up 15	.....	.....
February 4, 1935	Up 15	.....	.....
May 16, 1935	Cut 15	.....	.....
June 26, 1935	Cut 15	.....	.....
July 16, 1935	Cut 10	.....	.....
August 29, 1935	.....	.....	Cut *1
September 6, 1935	Up 5	.....	.....
October 29, 1935	Up 15	.....	.....
November 1, 1935	.....	.....	Up *28
November 18, 1935	Up 15	.....	.....
December 6, 1935	.....	.....	Up *9
January 9, 1936	.....	Up 10	.....
January 13, 1936	Up 15	.....	.....
February 26, 1936	.....	.....	Up †5
December 28, 1936	Up 12	.....	.....
January 28, 1937	.....	Up 12	.....
February 24, 1937	Up 10	.....	.....
June 7, 1937	Up 15	.....	.....
September 1, 1937	Cut 22	.....	.....
October 12, 1937	Cut 25	.....	.....
December 1, 1937	Cut 15	.....	.....
March 7, 1938	Cut 17	.....	.....

* Signal Hill 26 gravity. † Seal Besch 26 gravity.

Crude Production Taxes

Oklahoma—Five percent of gross value less royalty interest.

Texas—2¾ cents or 2¾ percent, whichever is higher.

Louisiana—From four to 11 cents a barrel, depending upon gravity.

Arkansas—2.6 percent of gross market values.

Montana—Two percent of gross value at well and 3/8 of 1c per barrel.

New Mexico—Severance tax of 2 percent on oil and gas.

Wyoming and New Mexico—Production tax based upon state and county assessments.

California—.66443 mills per barrel of oil produced and 17.39 cents an acre on proved lands.

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[*Continued from page 59*]

planning to remain in Washington until the present session of Congress is adjourned, believing that danger still exists in the possibility that in the rush of the closing days of Congress, the Nye resolution would be slipped through.

Proposes naval reserve investigation

A special House investigation of all leases and purchases of land in Naval Petroleum Reserves Nos. 1 and 2, California, was asked by Representative Alfred N. Phillips, Jr., of Connecticut, June 1.

A bill authorizing an appropriation of $50,000 for expenses of the investigation, to be made by a committee of 5 congressmen, was introduced by Representative Phillips and referred to the House Rules Committee.

The committee would have "the power to summon before it as witnesses all persons whom they believe to be possessed of knowledge concerning the above leases or purchases and shall also have the power to call upon witnesses and all others believed to have or know of such documents to produce all records, books, documents, maps or other data in or out of their possession referring to or in any way connected with aforesaid leases or purchases."

The committee would submit its report to congress at the close of its investigation.

Atlantic enlarges water terminal tank facilities

To provide for increased demand for its products, The Atlantic Refining Company will increase the storage capacity of its water terminals at Newark, N. J., New Haven, Conn., and Kettle Point (Providence), R. I. Docking facilities at Newark will also be enlarged.

Two new all-welded steel storage tanks with a capacity of 1,120,000 gallons each will be erected at Newark. One new tank with a capacity of 750,000 gallons will be erected at New Haven, and one new tank with a capacity of 725,000 gallons at Kettle Point. Construction at all three terminals will be started early in June. Total cost of the increased storage and docking facilities will be in the neighborhood of $270,000.

Proration

[*Continued from page 60*]

and fuel oil stocks are over 38 percent higher than a year ago, while the total domestic demand for the first three months of 1938, as compared with 1937, has declined approximately 3 percent. Increased exports of crude oil and refined products have to a large extent counteracted this decline in domestic demand, but present indications are that the trend of increasing exports will not be maintained.

"In the past it has been the custom of the commission to set a basic allowable at the beginning of the month and add to this basic allowable the allowable of the new wells as they were completed. Due to the active drilling campaign in many fields the result was a sharp increase in the daily allowable long before the end of the month. In order to consolidate the gains already effected by strict curtailment of production, the commission has adopted for June the policy of reallocating the basic allowable as of June 1, to the wells which are on the schedule as of June 15, 1938.

"It has been necessary for the commission to place this policy in force in an attempt to prevent the allowable production allocated to new wells from creating overproduction in this State."

Union starts buying at Santa Maria again

Union Oil Company resumed crude purchases in the Santa Maria Valley field as of June 1, rescinding its former order to stop buying. It was revealed that the company would take 5000 barrels daily at the last posted field price on the prorata basis observed during April and May.

CALIFORNIA CRUDE OIL PRICES

(Posted February 1, 1936; except El Segundo and Wilmington, posted October 15, 1937, and Greeley and Canal posted December 1, 1937). All gravity above those quoted take highest prices of that field.

Gravity	El Segundo & Signal Hill	Seal Beach Alamitos Heights	Huntington Beach	Inglewood	Playa Del Rey	Olinda Brea Canyon	Athens Rosecrans	Torrance	Richfield	Whittier East Coyote La Habra	Montebello	West Coyote Hills	Santa Springs	New Hall McKittrick Kern River Round Mountain	Greeley, Canal	Mountain view	Midway-Sunset Buena Vista Hills Elk Hills	Lost Hills	Conlogo	Wheeler Ridge	Wilmington
14 14 9	$ 80	$ 79	$ 78	$ 79	$ 80	$ 76	.	$ 80	$ 76	$ 76	$ 77	$ 78	.	$ 70	...	...	$ 70	$ 70	$ 70	.	$ 75
15-15 9	80	79	78	79	80	76	..	80	76	76	77	78	.	70	..	..	70	70	70	...	75
16 16 9	80	79	78	79	80	76	...	80	76	76	77	78	...	70	..	..	70	70	70	...	75
17 17 9	80	79	78	81	80	76	....	80	76	76	77	78	...	70	...		70	70	70	...	77
18-18 9	80	79	78	84	80	78	....	82	76	76	77	78	...	70	...		70	70	70	...	79
19 19 9	82	79	82	87	84	81	.	85	76	78	.77	.78	...	.70	....	$.70	74	74	71	$ 70	82
20-20 9	85	79	85	90	88	84		88	78	82	.77	.80		....	...	.70	78	78	72	70	85
21 21 9	88	79	90	93	93	88		91	80	85	.77	.84	$.78	....	....	.73	82	82	74	70	88
22 22 9	92	82	92	96	96	92		93	84	90	.79	88	.78	....	...	77	87	86	78	72	92
23-23 9	95	86	96	99	1 02	96	$ 84	96	88	93	.82	92	.78	....	..	80	92	90	82	76	95
24 24 9	99	91	1 00	1 02	1 06	99	88	99	91	96	85	96	82	....	....	84	97	94	86	79	99
25 25 9	1 03	95	1 03	1 05	1 11	1 03	93	1 02	95	..	89	99	86	....	....	88	1 01	98	90	83	1 03
26 26 9	1 06	1 00	1 07	1 09	1 16	1 06	98	1 05	98	...	92	1 03	90	Elwood		91	1 06	1 02		...	1 06
27 27 9	1 10	1 05	1 11	1 12	..	1 10	1 03	..	1 02	...	96	1 06	95	Ter-	$ 84	95	1 10	1 06	..	...	1 10
28 28 9	1 14	1 10	1 14	1 15		1 14	1 07	..	1 06	...	99	1 10	99	race	88	99	1 15	1 10	..	....	1 14
29-29 9	1 17	1 18	1 18	1 18	F.O.B	1 17	1 12	..	1 09	.	1 03	1.14	1.03		92	1 02	1 20	1 14	...	....	1 17
30 30 9	1 21	1 19	1 22	1 21	Pipe	1 21	1 17	..		...	1 07	1 17	1 08	F.O.B.	95	1 06	1 25	1 18	...	....	1 21
31 31 9			..	1 24	Line	1 24	1 22				1 11	1 21	1 12	Ship	99	1 09	1 29	..	..	....	....
32 32 9	..	...	..	1 27	..	1 27	1 27	Kettleman Hills			1 14	1 25	1 16	.	1 03	1 13	1 34	...	...	....	..
33-33 9	...	...	..	...	..	...	1 32	1 19			1 18	1 28	1 20	1 28	1 07	1 17	1 38	..	..	....	.
34 34 9	...	...	..	...	..	...	1 37	..	1 23	...	1 22	1 32	1 25	1 32	1 11	1 20	....	...	..	....	..
35 35 9	..	...	..	...	..	...	1 42	..	1 27	...	1 25	....	1 29	1 35	1 15	...	....	...	..	....	..
36 36 9	..	...	..	...	..	...	1 46	..	1 31	...	1 29	....	1 33	1 39	1 19	...	...	...	..	..	
37 37 9	...	...	..	...	..	...	1 51	..	1 35	...	1 32	....	1 37	1 43	1 23	..	....	...	..	..	...
38-38 9	..	..	.	..	..	..	1 56		1 39	...	1 36	...	1 42	....	1 27	..	...	...	..	....	..
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40 40 9	..	...	..	...	..	...	1 66	..	...	.	1 43	..	...	....	1 34	.	....	.	..	....	..
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47 47 9	...	....	...	...	..	...		..	...	...	...		....	....	1 60		....	...		....	..
48-48 9		...	..										....	....	1 64		....				

FIELD DEVELOPMENT HIGHLIGHTS

IN THE Dulac area of Terrebonne Parish of South Louisiana, a wildcat has set 5-inch liner at 13,333 feet for a production test. If completed there it will be the world's deepest producer. A three-quarter mile outpost at Choctaw, Iberville Parish, is flowing 600 barrels from a new Oligocene sand at 8250 feet. A 10,045-foot producer extended Lafitte north. Abbeville field, Vermilion Parish, got a new sand when a completion flowed 504 barrels from 6424 feet.

North Louisiana

Near Logansport in De Soto Parish a wildcat perforated Glen Rose formation at 4950 to 5030 feet and is showing for a wet gasser. In the same parish, another test in Section 5-12n-16w, is flowing by heads while testing Glen Rose at 5440 feet. Near a two-mile southwest outpost for Lisbon a test logged fair saturation.

The third Permian lime producer in Schuler field, Arkansas, was completed for 23 barrels per hour.

North Texas

Northeastern Cooke County gained a new pool that may extend into Oklahoma when a wildcat swabbed 25 barrels hourly from Deese sandy lime at 4895 feet. Archer County reported two Ellenberger failures: one a wildcat in the northeastern part of the county, and the other the second deep test of that formation in Panther pool. However, a test near Scotland flowed 65 barrels from sandy lime at 4152 feet. A mile northeast of Holliday a wildcat logged saturation at 4137 feet, below the water level of K-M-A field, and another Archer County test four miles southeast of Mankins is running high after passing up minor saturation in oolitic lime.

Southwest Texas

Duval County got two new fields: one discovery producing from Cole sand is two miles southeast of Charamousca field, and the other, producing from Pettus, is five miles southwest of San Diego. Saturation in lime at 5485 feet indicated a second Glen Rose pool on the Chittim ranch in Maverick County. A Frio County wildcat shut down for repairs is showing saturation in Austin chalk at 5085 feet.

A deep test in Alice field, Jim Wells County, will complete in the regular 5241-foot zone after having failed to find any shows between there and 5606 feet.

On the Crosby prospect of Harris County, Texas Gulf Coast, a test is reported running 200 feet high, and another, 7000 feet from production a Fairbanks, is checking favorably. A flank attempt on the old Humble field, in the same county, was a fizzle.

Illinois

The second well on the University of Chicago property north of Olney was dry, casting a damper on that area. Although tight saturation was found in the Devonian for a number of feet, a wildcat in Oskaloosa township, Clay County, continues drilling toward the 5500-foot objective. In the same county a wildcat in Harter township swabbed 10 barrels an hour.

On the Agate anticline of Sioux County, Nebraska, a wildcat continued drilling after getting a show of oil in the Lakota.

Kentucky

A tight section of McClosky sand in a Henderson County test apparently foretold the limits of the new Birch City field on the southwest. In Webster County a wildcat was completed two miles northwest of Sebree for 1,680,000 cubic feet of gas from 900 feet.

In Posey County, Indiana, a wildcat in Section 1-7s-12w, Marrs township, got 30 barrels per day from formation at 1741-44 feet and is deepening.

Michigan reported a good completion on the west flank of Buckeye field which will call for between 20 and 30 new locations, and a half mile south of previously established Monroe lime production in the Sherman-Broomfield pool of Isabella County a well produced 300 barrels after using acid.

Comparison of Permits Granted For New Wells

STATE	Week Ending June 4	Total this Mo.	Total this Year	Total this Date Last Year	1937 Year Total
Arkansas	4	4	97	74	240
California	29	29	555	667	1,584
Louisiana	12	12	516	510	1,227
Kansas	15	15	689	1,155	2,663
Michigan	13	13	319	409	958
Oklahoma	23	23	908	1,328	2,711
Texas	132	132	6,094	7,882	17,238
Total	228	228	9,178	12,025	26,621

Summary of Wells Completed in the United States
Week Ending June 4, 1938

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total, 1938	Total this Date, 1937
Alabama	....	....	....	....	.....	2	1
Arkansas	8	7	....	1	4,448	107	37
California	26	21	1	4	12,849	527	559
Colorado	....	....	....	....	.....	4	6
Florida	....	....	....	....	.....	....	.....
Georgia	....	....	....	....	.....	1	.....
Illinois	33	31	1	1	6,542	416	38
Indiana	....	....	....	....	.....	46	45
Kansas	41	30	3	8	37,583	794	1,029
Kentucky	19	12	5	2	2,120	304	89
Louisiana	19	14	1	4	6,694	442	338
Michigan	20	9	....	11	691	345	362
Mississippi	1	....	1	....	.....	9	6
Montana	....	....	....	....	.....	25	57
Nebraska	....	....	....	....	.....	1	.....
New Mexico	8	8	....	....	5,594	224	300
New York	....	....	....	....	.....	19	5
Ohio	9	4	5	....	14	383	621
Oklahoma	40	24	1	15	2,268	939	1,341
Pennsylvania	2	....	2	....	.....	78	73
Tennessee	....	....	....	....	.....	2	.....
Texas	280	200	5	75	301,328	5,756	6,283
Utah	....	....	....	....	.....	....	.....
West Virginia	7	1	1	5	20	319	371
Wyoming	....	....	....	....	.....	41	49
Total this week	513	361	26	126	380,151	10,784	11,610
Total last week	543	395	29	119	479,945	....	.....
Total this year	10,784	7,446	866	2,472	8,767,998	....	.....

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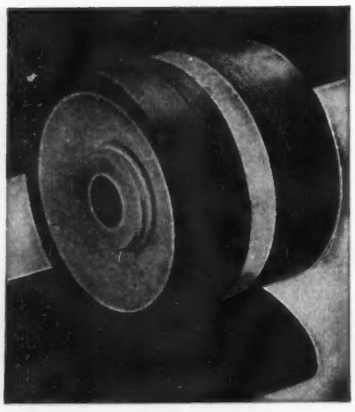

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California Fields

Well gives impetus to West Montebello drilling.

Additional tests get under way in new Wasco area.

Los Angeles.—Added impetus is seen in drilling activities for the West Montebello field with the completion of St. Helens Petroleum Company's Monterey 26 for an initial yield of 2400 barrels of 37° gravity oil per day at a depth of 5775 feet. Flow from this well has been choked in and the crew shifted to Monterey 28, rig for which is being completed. Gilmore Oil Company is completing foundation for Montebello Land & Water 1 at Lincoln and Maple streets and F. E. Fairfield, independent operator will handle drilling. Fairfield also has staked location for Rosecrans 1 to test out the west extension of Main Street in the Athens-Rosecrans field.

In the Long Beach Harbor field General Petroleum's SP 3 at 4125 feet was brought in for 500 barrels of 24.4° gravity oil per day. This well is situated on the north side of Southern Pacific lease on south bank of Channel 2. Its P. E. Community 2 will get under way at once. Hancock's Harbor A-4 at 4050 feet has been completed in the Ranger and Terminal zones for 2700 barrels daily.

Persistent rumors are circulating that Ohio Oil Company may attempt to equal or break the deep hole record established 60 days ago at Wasco field by the Continental Oil Company. Ohio's KCL 8-A at Buena Vista gas field is making progress with the drill below 10,700 feet and reports are that it will continue to core and drill until something worthwhile is discovered. Ohio controls 10 sections at Buena Vista Lake and its KCL 8-A is centrally located in the block.

Superior Oil Company's Wagner 3, Section 35-28-25, Rio Bravo was brought in last week for 1500 barrels of 37.2° gravity oil per day at 11,582 feet after taking in approximately 330 feet of oil sand. Wagner 3 is the first well at Rio Bravo to be cored through the oil structure. It is situated south of Geissinger 1.

With Standard Oil Company preparing to spud in its offset and derrick being completed for another project, the new Wasco field northwest of Bakersfield, Kern County, is taking on the appearance of a boom although every effort will be made to limit a competitive campaign. The company will start its first offset on Kern County Land Company holdings, and its Mushrus 1 will follow. Continental Oil Company's KCL A-3 will get under way this week.

Continental Oil Company's KCL E-1, northeast of Ten Section field, bottomed at 8287 feet, was plugged back to 8242 feet due to bottom water. A new plug was landed last week and drill pipe run in to clean out hole preparatory to a new attempt to bring in this well. Officials are confident that sufficient oil sand was cored to definitely prove up a new structure, or an extension.

Although insignificant results have been obtained in the old Potrero field, near Inglewood, during the past 10 years, it remained for the Basin Oil Company's Potrero Country Club 1 to discover what is believed to be a new producing horizon, when this project started flowing approximately 700 barrels of oil and water from 4745 feet. The Potrero field produces high-gravity crude. This success is expected to stimulate activity in the area south of Manchester Boulevard between Crenshaw and Centinella Boulevards.

Richfield Oil Corporation has recently acquired 5100 acres, three miles west of Ten Section field and will start operations sometime during the summer. The property is situated on the east flank of Elk Hills and includes Sections 28-29-30-32-33 and portions of Sections 20-21-22-27-34-36, Township 30S, Range 25E.

Union Oil Company has completed Wilcox 1, its second, in the west end of the Montebello field for 700 barrels of 35.2 gravity oil per day at 6248 feet. McVicar & Rood's Manz 1, set a potential of 1950 barrels of 39.5 gravity oil per day at 5719 feet.

Coming in on the pump for 300 barrels daily, Koontzman 1, completed in the Torrance field by Imperial Gypsum & Oil Company is one of the best wells brought in since the renewal of activity in this field. R. K. Wilson's Four 1 is yielding about 160 barrels by heads at 4986 feet. Independent Drilling Company has acquired A. D. Mitchell's Hamlyn 4 and will deepen it, while Charles T. McCowan will deepen Lora-J-Oil 1 on the south side of 231st street. Doyle's Getty 3 has been suspended at 5650 feet, although it may later be deepened.

CALIFORNIA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Long Beach—		
D. D. Dunlap Oil, No. 13	150	4985
Exeter Oil, Clark 2-A	68	3501
A. S. Johnston, No. 33	285	4280
Signal, P. E. 1	175	3959
Montebello—		
Union, Wilcox 1	850	6248
Potrero—		
Basin Oil, Potrero Country Club 1	475	4741
Torrance —		
Imperial Gypsum & Oil, Koontzman 1	306	5015
R. K. Wilson, Four 1	200	4986
Wilmington—		
Richfield, Pacific Dock 2	739	4232
Pacific Dock (LB) 3	644	4252
Pacific Dock (LB) 11	1450	3845
Pacific Dock 18	206	3043
P & G (LB) 1	2304	3903
Union Pacific, Union Pacific (LB) 73	1444	3960
Belridge—		
Texas Co., Martin 3	958	8435
Midway-Sunset—		
Berry & Ewing, No. 2	45	1220
Round Mountain—		
Shell, Freeman 17	797	1934
El Capitan—		
General, Erburu 18	125	1340
Santa Maria Valley—		
E. H. Moore, Union Sugar 9	850	4763
Union, O'Donnell 2-2	145	5240
Bradley Lands 3	633	5115
Rio Vista —		
Amerada, S. & S. J. 2	¶	4397
Arvin—		
General, Pauley 1	*	500
Mt. Poso-East—		
W. P. W. Pet. Co., Packard 3	*	1357
Ducor Area—		
Corbridge & Gould Baringer, Sears 2	*	843
Edison—		
Westbrook Co., Westbrook 1	*	3558

*Failures; †Junked; ¶Million cu. ft. gas.

Geology of El Segundo Field

By L. E. PORTER

This article, which has been abstracted slightly, was presented before the Petroleum Division of the American Institute of Mining and Metallurgical Engineers at Los Angeles on October 1, 1937. The original title of the paper was "El Segundo Oil Field, Los Angeles County, California."

THE El Segundo field is located about 14 miles southwest from the central portion of the city of Los Angeles, being immediately adjacent to the town of El Segundo and Standard Oil Company's El Segundo refinery site. The field is served and bisected by several major highways connecting the beach cities on the west side of the Los Angeles basin. The exact location of the field and its position with respect to other producing areas is shown on the map covering this portion of the basin.

Republic Petroleum Company discovered the first commercial production in the area when it completed El Segundo 1, Section 18-3s-14w, at a depth of 7402 feet on August 24, 1935, flowing at the rate of about 400 barrels per day of 28° gravity oil. The producing horizon in this well consists of about 72 feet of conglomerate and schist-conglomerate situated below the nodular shale (Miocene). The true (or solid) schist (Franciscan) was encountered and penetrated some 20 feet in the bottom of the hole.

Structure and Stratigraphy

The structure so far is interpreted as that of a faulted schist high representative of an old structural high which is Franciscan or pre-Franciscan in age. There is some reflection of structural doming in the Miocene sediments, below which production is found. To date, no production has been found above

the Nodular shale which immediately overlies the schist or conglomerate.

The field has been segregated into two major producing areas separated from each other by a major line or zone of fracturing with the westerly portion of the field on the up-thrown side. These two structural divisions are more clearly shown by reference to the subsurface contour map, the contours of which have been placed on the top of the producing conglomerate, if present, otherwise, on the top of the schist. The exact nature or position of the supposed fault has not yet been wholly disclosed. Future development may find it to be merely a steep escarpment on the schist itself, yet development to the present date strongly suggests that a major break will ultimately be found, the throw of which is indicated at present to be about 200 feet.

The stratigraphic column or geologic section in the area consists of formations belonging to the Pliocene and Miocene which overlie the Franciscan schist. The Pliocene-Miocene contact in the central portion of the field is encountered between 5200 feet and 5400 feet. (The relationship of this contact is shown in the subsurface section accompanying this paper.) The exact top of the Miocene has not been determined through coring, the information being obtained from electrical logs which have given fair evidence as to the position of this contact. The sediments from about 5200 feet to the top of the schist, which is encountered from 7200 feet to 7450 feet, consist mainly of the typical Miocene sands and shales found elsewhere in the Los Angeles Basin. The most interesting unit of this series is the dark brown Nodular shale which directly overlies the producing oil horizon. Samples of this shale have been photographed and are shown on Photograph A. The nodules themselves are gray to brownish-gray in color and vary as a rule from ½-inch to 2 inches in diameter. They appear to be highly phosphatic and occur along with a brownish to dark colored banded shale. The dip in the Nodular shale so far appears to be non-conformable to the dip of the conglomerate or sand phases of the producing zone.

In many ways, the Nodular shale, the conglomerate, and the occurrence of the oil in the schist is a condition similar to that found in the lower zones in the nearby Venice and Playa Del Rey fields and certain portions of the Torrance field. The El Segundo field differs mainly from Venice in the fact that so far no production has been discovered above the Nodular shale and also in the fact that in the vicinity of the intersection of El Segundo and Sepulveda Boulevards the wells have encountered schist that has been somewhat fissured through erosion and fracturing. The oil in this field is 27° to 28° gravity whereas the Venice oil varies from 20° to 24°.

In the eastern half of the El Segundo field most of the oil occurs in a conglomerate or schist conglomerate. This conglomerate apparently has been deposited upon an uneven erosion surface of the schist and its thickness varies from a few feet to as much as 90 feet, the greatest thickness so far having been encountered in Richfield Oil Corporation's El Segundo 1. The color of this formation is generally gray to greenish gray including irregular pebbles of schist as well as some well rounded quartz and basaltic gravels, some having a diameter as great as 1½ to 2 inches. Tests upon the conglomerate indicate a porosity as high as 13 percent. In the case of the more or less distinct sand encountered in Richfield Oil Corporation's El Segundo 6, a porosity as high as 28 percent has been measured.

In the so-called western area or western half of the field, the production so far has been confined to a fractured and irregular schist formation. Core samples have been extracted from some of the wells which show large pyrite crystals on the inside walls of fissures. In the case of one example, a hole as large as 0.35 inch has been measured. There is much speculation as to the occurrence of production in this so-called schist horizon. Tests have been made on certain samples for their porosity. For example in Richfield Oil Corporation's Elsie 2, a porosity of 14.5 percent was found. The solid schist found at the bottom of the hole has a porosity of only 5.8 percent. These low porosities strongly suggest that the occurrence of oil in this western area must be confined principally to the fissures and fractures which have been made in the schist subsequent to its transformation.

Gravity and Character of Oil

The average gravity of oil in this field varies from 27° to 28°. The analysis indicates about 1.5 percent sulfur, and a gasoline content of 28.6 percent at 437° F. The crude also yields about 4.5 percent of gas-oil with a gravity of 31° with a sulfur content of about 1.08 percent at the end point of 685°. Some samples have tested 58.6 percent in fuel oil, the gravity of which is 16.5°.

Drilling and Production Methods

The rotary method of drilling has been used exclusively throughout the field. The wells are drilled to a depth of 7200 to 7400 feet in approximately 50 to 60 days at a cost of about $70,000 to $80,000 per well, depending upon the type of casing program used. One casing program is 13⅜-inch at about 1100 feet, 8⅝-inch on top of the oil zone and 6⅝-inch liner in the zone. Another casing program is 11¾-inch at 700 feet, 7-inch on top of the oil zone around 7200 feet and a 4½-inch or 5-inch perforated liner.

Summary

The production in the eastern area of the field is confined to the conglomerate and schist-conglomerate. Flowing wells to date have shown some tendency for counter-drainage. Porosity test of conglomerate and sand samples indicates a porosity as high as 28 percent. The recovery per acre will probably be low but will be found to be strictly dependent upon the thickness of the producing zone for any given well.

In the western area the production seems to be confined mainly to fractured and fissured schist, the voids of which no doubt have been promoted through action of hydro-thermal waters, faulting and fracturing. Tests on the solid schist samples indicate a porosity of 5 percent or less, which eliminates such formation samples as a possible reservoir, confining the accumulation to the subsequently created voids and fissures. The high pressure and sustained production in the initial wells suggests that such fissures and faults either exist to considerable depth in order to promote an adequate reservoir or else such fissures are being fed by an adjacent sedimentary reservoir as yet unrecognized. So far it is impossible to predict what the recovery per acre in this type of material will be.

The character of the reservoir and the type of material seen in cores to date would suggest that the operators in this area should resort to proper well space and well control if adequate reservoir pressures are to be maintained and the greatest recovery of oil is to be had.

Flow of hydrocarbon fluids from a "combination" well

Preliminary results of a study of the phase relations of fluids in a deep high-pressure, high-temperature reservoir of gas and light gravity hydrocarbon liquid were discussed in a report made public by the Bureau of Mines, Department of the Interior, at the convention of the Natural Gas Department, American Gas Association, held this week in New Orleans, Louisiana. A study of well performance and liquid recovery at several rates of fluid delivery, and analyses and measurement of physical properties of fluid samples taken under stabilized conditions of pressure and flow gave the data essential to the investigation.

In the course of the tests made by the Bureau of Mines, surface samples of hydrocarbon liquid and gas were taken at the separator under conditions of stabilized flow for re-mixing in the proportions of the measured ratio of gas to hydrocarbon liquid to provide a system on which phase relations at reservoir and flow-string pressures and temperatures could be determined. A subsurface sample of hydrocarbon liquid from the well bore provided a liquid phase that in composition and properties closely approximated a liquid that could originate in the reservoir.

Although comparison of the gas-hydrocarbon liquid ratios of the well under several rates of fluid delivery did not indicate conclusively the presence of a hydrocarbon liquid phase in the reservoir, the field tests showed that hydrocarbon liquid was present in the well bore while fluid was being produced from the well.

It was concluded that part of the fluid recovered from the well was present in the reservoir in liquid phase, and the remainder was formed during the process of production by condensation of heavy components from the original reservoir vapor phase.

The report, containing several graphs and tables that should assist engineers in developing further knowledge on this important practical problem of operation, has been published as Report of Investigations 3402, Flow Characteristics, Composition, and Some Liquid-Phase Properties of Hydrocarbon Fluids from a "Combination" Well, by C. K. Eilerts and M. A. Schellhardt. Copies are available without charge upon request from the Bureau of Mines, Washington, D. C.

Oklahoma Fields

Completion of two strikes pending line connections.

Sinclair's Logan County discovery makes 240 barrels.

Tulsa.—Three Oklahoma wildcat wells, which indicated as many new pools the last week in May, were still not completed last week. Pipe line outlets must be provided before two are tested while the third will be drilled deeper.

Sinclair Prairie Oil Company is rigging standard tools to drill deeper in Crews 1, SWc ne, 26-16n-1e, Logan County, where Wilcox sand production was established May 28 from 5215 feet. Top of sand was 5193 feet. Production by flowing and swabbing thus far has been through nine-inch casing set at 5147 feet. After 12 hours of bailing the well swabbed and flowed 240 barrels in 24 hours. In another 24 hours it made 227 barrels on the swab and by heads.

The Texas Company's Payne County strike, Logan 1, SWc 12-17n-1e, will be tested after pipe line connection is made. It is at a plugged back depth of 4960 feet, total depth 5006 feet in the Wilcox sand. Seven-inch casing was set at 4806 feet and tubing was set at 4944 feet. The well flowed 275 barrels while tubing was being run.

These two wells are southwest of the Ramsey pool, Payne County. The Ramsey pool got its ninth producer June 1, Columbia Wetzel 3, NW NE SW 18-18n-2e, drilled by Mid-Continent Petroleum Corporation, was completed for initial of 7780 barrels. This well completes the current drilling campaign for the Ramsey pool, a unit block owned by four concerns.

Further testing of the Cleveland County wildcat of W. A. Delaney, Burgher 1, SEc SW, 12-7n-2e, will be done after short pipe line has been laid to a loading rack. Since tubing was set, this test in the Wilcox sand, total depth 7682 feet, has been making around 25 percent water.

Ramsey Drilling Finished

The current drilling campaign for the Ramsey pool, Payne County, was wound up during the week by completion of two wells, to give it eight producers, while the ninth well was in the sand ready to be washed in. Although no other locations have been staked, the community block, operated by Mid-Continent Petroleum Corporation, has other favorable locations, which will be drilled later.

Its seventh well was completed May 30 when Mid-Continent Petroleum Corporation washed in Ramsey 3, SE SW NW, 18-18n-2e, for flowing output of 940 barrels in two hours. The second Wilcox sand was topped at 4755 feet and the hole was bottomed at 4793 feet.

The next day the pool registered its eighth producer by completion of Brandon 2, NE SE NE, 13-18n-1e, from the second Wilcox sand, 4802 to 4834 feet. It flowed 420 barrels the first hour and 400 barrels the second hour, for potential rating of 10,080 barrels. This well was a slight extension to the northwest.

The community block is owned by Mid-Continent Petroleum Corporation, Sinclair Prairie Oil Company, Carter Oil Company and Transwestern Oil Company. Dry holes have stamped the productive area as small but final development is expected to more than double the number of present producers.

The Payne County test of R. L. Kemp, Rafferty 1, SE NE 6-18n-5e, which gave indications of opening a pool last week, is still standing with 400 feet of oil in the hole. It will be given a shot. This well had the top of the first Wilcox sand at 3663 feet, second Wilcox sand at 3677 feet and was drilled to 3705 feet. Here it showed a little water. Sufficient plugging back will be done to rid the hole of water before the formation is shot.

Milroy Well to Test

In Southern Oklahoma the second well of the deep sand of the Milroy pool is due for early testing when plugs are drilled in Carter Oil Company's Harley 1, C NW NW 19-2s-3w. Casing was cemented at 8280 feet. This well in Carter County is an east offset to the discovery well, drilled by the same company, Harley Community 1C, NE NE 24-2s-4w, Stephens County, and completed in October, 1937, for 2769 barrels, total depth 8157 feet. This well has been flowing since completion.

Early last week the Oklahoma Corporation Commission approved 40-acre spacing for this area. This drilling pattern has been followed in development and was urged by holders of the leases within the area that looks good for deep development.

Other drilling wells are now at sufficient depths to assure prompt determination of the extent of the deep productive zone.

Carter Oil Company's Feagan 1, C NW SW 36-2s-3w, Carter County, is drilling below the Viola lime at 6600 feet. Gulf Oil Corporation is in the Viola lime in Lester 1, C NW NW 35-2s-3w, 6100 feet. Johnson A-1, Gulf Oil Corporation, C SE NW 27-2s-3w, is drilling at 6250 feet. Its Franklin 1, C NW SE 27-2s-3w, is drilling at 6400 feet. It's Gorrett 8, C NW SW 27-2s-3w, passed 5000 feet last week. No. 2 McClure, also being drilled by the Gulf Oil Corporation, C SE SE 28-2s-3w, is below 6000 feet.

Further drilling for the Tillman County area discovered last year by Indian Territory Illuminating Oil Company and Foster Minerals Corporation was assured last week when these concerns staked locations for two more wells, No. 2 Graham, SW NW NE 1-3s-19w, and Graham 3, NW NW NE 1-3s-19w.

The field has three wells, which are producing from the Canyon lime, with the pay zone between 3075 and 3100 feet.

A showing in the wildcat of Pure Oil Company, Lack 1, SE SW NW 3-6n-5e, Seminole County, gave encouragement for dolomite production between the St. Louis area, Pottawatomie County, and the Konowa pool, Seminole County. The hole found top of dolomite at 4090 feet and drilled to 4116 feet, where it had 300 feet of oil in the hole.

An outpost wildcat for northwestern Oklahoma was started June 1 by Champlin Refining Company, Boehm 1, SWc NE 4-24n-8e, Garfield County. It will be carried to the Wilcox sand. The test is 35 miles northwest of the old Garber pool, same county.

Kansas Field Developments

Arbuckle lime production established for Harbiger.

Zenith gets another half mile extension north.

Wichita, Kansas.—Proven Arbuckle lime production for the Harbiger pool, Rice County, a second half mile north extension for Zenith pool, Stafford County, and indications of a link between the West Ellinwood and North Ellinwood pools, Barton County, were the leading developments in Kansas last week.

In addition to establishing Arbuckle lime production at Harbiger, Vickers Petroleum Company's Roesler 1, NW SW 5-18-10 west, gives indication of linking the Stumps pool one mile, east, with the Bloomer pool of Barton County. The Roesler well was dry in the Kansas City lime, where other Harbiger production has been found. At 3199½ feet in the Arbuckle lime it filled 900 feet with oil. Then it was drilled to 3202 feet and tubing run. Without acid it began flowing 100 barrels an hour.

The well is an offset to Mid Continent Petroleum Corporation's Schlicht 1, NE SE, 6-18-10 west, which had small output in the Kansas City lime and is now being deepened.

Both the Stumps pool to the east and the Bloomer pool to the northwest have production in both the Arbuckle and Kansas City Limes. The well is within the area now getting most of the play in western Kansas drilling.

The second extension for the Zenith Misener sand pool, Stafford County, was assured when Stanolind Oil & Gas Company got an hourly natural flow of 21 barrels from Sims 1, SWC NE 11-29-11 west, total depth 3752 feet. Top of the sand was found at 3747 feet, where the formation began showing. The well is a half mile north of Hays 1, also drilled by Stanolind to extend the field a half mile northward. Zenith pool proper has 12 wells, all owned by this company. These have a total potential of 16,457 barrels.

Between the North Ellinwood and the West Ellinwood pools, Stanolind Oil &

Gas Company has 600 feet of oil in the hole of Soeken 1, C SE NW 5-20-11 west. The well had top of the Arbuckle Lime at 3323 feet and drilled to 3332 feet, where cleaning out established sufficient oil to stamp the test as either a link between the fields or a small structure. The two Ellinwood pools each have but one well, while the Ellinwood field proper has 16 wells.

A minor extension to the Chase pool, Rice County, was indicated by the test of C. H. Weaver, Handy 1, NEC SE 30-19-9 west, which found the Arbuckle Lime saturated when topped at 3275 feet.

A second well for the Rutherford pool, Reno County, was assured when Derby Oil & Refining Company's Johns 1, NEC 36-22-5 west, filled 3600 feet with oil from the Wilcox sand, total depth 3909 feet.

In extreme western Kansas, the Finney County wildcat of Atlantic Refining Company, Nunn 1, SE NE 21-27-34 west, continued drilling after finding the Mississippi Lime non-productive. Previous coring had given slight saturation at 4464 feet.

England will depend on imported oil for defense

A recommendation that Great Britain continue to depend on imported petroleum supplies, made two months ago by a sub-committee of the committee for imperial defense, has been accepted by the government, Sir John Simon, chancellor of the exchequer, advised the house of commons recently.

Simon said that legislation would be presented containing provision for a 12-year preferential tariff of 8 pence a gallon in favor of oils for Diesel motors produced in Great Britain and usable in highway vehicles.

The imperial defense sub-committee held that imported supplies were the "most reliable and economic means of providing for an emergency." It was the sub-committee's recommendation, also, that the preferential tariff be advanced to eightpence (16 cents) from the present level of fourpence.

A group of British experts in Canada to survey the possibility of obtaining a supply of airplanes from Canada for use in the Royal Air Force, and appointed by the British war office, has been invited by the Alberta Petroleum Producers' Association to visit Turner Valley and investigate Turner Valley crude oil as a source of gasoline supply for British planes.

It is suggested that with Valley wells held to 44 percent of potential because of limited marketing facilities, large quantities of crude could be shipped to Vancouver, British Columbia, by train, and from that port by boat to England.

Tests have shown that gasoline of high gravity and a very high octane rating can be extracted from Turner Valley crude.

May build refinery to handle Hungarian crude

Production from two of its oil wells in the relatively new oil field at Szentador-Lispe holding up to between 11 and 12 carloads of oil per day, European Gas & Electric Company is understood to be contemplating erection of a refinery at Nagykanizsa, near the Hungarian field. According to word from Budapest, the oil has a gasoline content of 42 percent.

West Texas Fields

Major extension looms for Dean-Duggan district.
Andrews County deep test develops small gas flow.

Midland, Texas.—A major extension for the Dean-Duggan district, Cochran County, was in prospect late last week when Honolulu Oil Corporation's C. S. Dean 1-91, Lipscomb County school land survey, League 91, began filling with oil while drilling the upper section of the Permian pay at 5076 feet.

The hole filled 500 feet with oil after logging first saturation at 5014 feet, and an increase at 5040-45 feet, with an elevation of 3729 feet. Top of brown lime was called at 3830 feet and first solid lime at 4200 feet. Location is about 1½ miles south of Wiggins-Hyde et al's Dean 1, which is classed as the discovery of the Dean pool, and is 3 miles west by north of the Duggan field.

Frank Perkins et al's Cowden 1, southwestern Andrews County wildcat and the first deep drilling project for the upper portion of the Permian Basin in Texas, developed a small gas flow after gun perforating 5-inch casing opposite saturation in Pennsylvania at 7760-71 feet. The hole was loaded with oil before tapping the pipe, and the gas caused the well to flow by heads. Additional perforations will be made at a higher level. Cowden 1 was carried to 8012 feet, and pipe was cemented at 8004 feet.

Extension Flows

Chas. Cope, J. L. Frick et als Riley-Atlantic 1, four-mile northwest extension for the Seminole field, Gaines County, flowed 135 barrels of 32.4 gravity oil initial through one-inch choke for completion after using 1500 gallons of acid in lime at 5071-98 feet.

Skelly Oil Company is starting operations on a Hockley County wildcat that will be tested to the 5300-foot level and on two tests that offset production in the Yoakum County sector of the Wasson field. Davidson Drilling Company has the contracts. Rotary has been moved in to drill Ellwood 1 to test the Hockley County block, and location is 2344 feet from north and 3981 feet from east lines of League 15, Howard County School Lands, 9 miles south by east of Levelland. The Wasson tests involve Thomas 1, NWC of the south 200-acres of Section 864, and Kendrick 1, C NW NW Section 867. The latter offsets the easternmost producer in the field.

Southeastern Cochran County wildcat drilled by The Texas Company on the Mallet ranch, near NEc PSL Section 7, Block G, is listed as a completion after plugging back from water at 5062-5122 feet to 5058 feet, where it was acidized twice. The well swabbed seven barrels fluid hourly, averaging 20 percent b.s., and may not be produced regularly at the present in view of the absence of pipe line connection. It is located five miles southeast of the Duggan pool, and 7½ miles west by south of the Slaughter area, both dependent upon tank trucks for market outlet.

A standard rig has been ordered for Magnolia Petroleum Company's J. D. Webb 1, SW SW NE Section 477, Block D, Yoakum County wildcat, to condition hole and try for a pumper. This well swabbed one barrel of 18 gravity oil hourly for a period. It was plugged back from sulphur water at 5626-39 feet to 5380 feet for a nitro shot, then acidized twice. The oil is the lowest gravity in the north portion of the basin.

Three wildcats in southwestern Andrews County that have considerable bearing on high priced University leases are holding the spotlight. S. H. Forgeron et al's Lockhart-Brown 1, C NE NE PSL Section 20, Block A-41, was drilling plugs from 7-inch pipe cemented at 4307 feet, with the hole bottomed at 4483 feet. An unusually large number of companies purchased lease protection around this project. Atlantic Refining Company's University-Texas Company 1, near C NW NE Section 26, Block 11, was drilling at 4260 feet. Top of Yates was called at 2760 feet, with an elevation of 3289 feet. R. R. Rhodes, J. D. Tompkins et al's Emma Cowden-Sinco 1, NE NE NW T&P Section 1, Block 44, T-2-N, 1½ miles northwest of an abandoned pumper, encountered gas in Yates sand topped at 2720 feet, with an elevation of 3166 feet, and was drilling at 2950 feet. H. C. Wheeler and associates are reported to be negotiating for a test to be drilled to the east of Shafter Lake and near center of SW¼ PSL Section 18, Block A-36.

All but 14 Texas counties in oil play

That all but 14 Texas counties are now under development for oil and gas is shown by a map just prepared by The Texas Mid-Continent Oil and Gas Association.

As a result of the continual search for possible new oil fields in Texas 45 million acres of land spread over 240 of the State's 254 counties, are now under lease in proven and prospective oil territory. This widespread activity of the State's oil industry has been a major factor in placing Texas to the forefront as one of the nation's bright spots on the business map.

Leasing of land, prospecting for and producing oil have collectively proven a boon to Texas farmers and landowners, for last year their combined income from lease rentals, lease bonuses and royalty payments amounted to 105 million dollars. And, it is likely that this year's payments will be even greater. On the basis of last year's total crop value, these payments to farmers and landowners of Texas constituted an extra "cash crop" which was the equivalent of 26 cents above every dollar received for crops.

Oil and gas are being produced now in 130 counties of Texas, while leasing of lands and exploration for new oil fields is being actively pursued in 110

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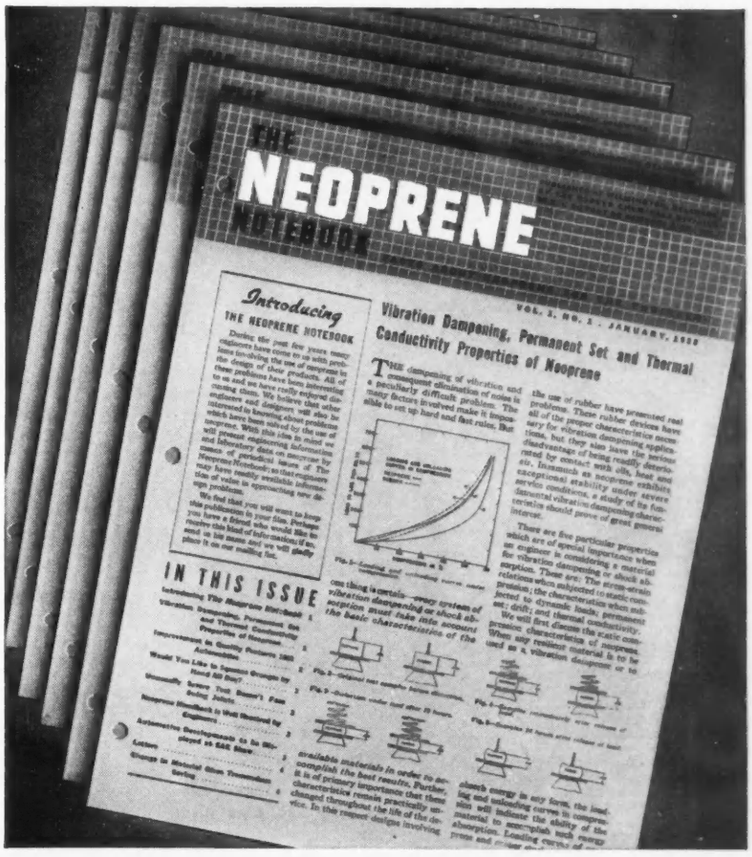
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counties which are not as yet productive of oil and gas. Wildcat wells are being drilled in many of these non-producing counties at this time, with the expectation of finding new sources of oil supply. Discovery of production in these areas means added income for farmers and landowners in the form of royalty payments on every barrel of oil produced.

Chapel Hill discovery yields gas and distillate

Tyler, Texas.—Preliminary production tests given Hunt Oil Company's Bradley 1, Lower Trinity discovery for the Chapel Hill area, eastern Smith County, rates the well as being good for 8 to 10 million cubic feet of gas daily and considerable dark colored distillate through tubing choke. Heavy rotary mud used in holding back the flow while attempting to free stuck drill pipe at 7520 feet, or 8 feet off bottom, has not been recovered. The stem was cemented in the hole, and completion is being attempted with tubing inside the drill pipe. Production is from Lower Glen Rose, topped at 7259 feet, and will be available for fuel, gas lift units and repressuring in the East Texas field, situated 8½ miles to the east. Additional deep tests will be started shortly on short term leases in the Chapel Hill area.

Humble Oil & Refining Company and Gulf Oil Corporation's Robertson 1, Gregg County wildcat on the east flank of the East Texas field, failed to show production in lower Marine after gun-perforating casing at 9654-90 feet and 9375-90 feet, and hole has been plugged back to test the Travis Peak, Pettit, and lower Glen Rose horizons, which carried gas shows, according to the log.

WEST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Cochran County (Wildcat)—		
Texas Co., Mallett 1	135	5122
Crane County (Jordan)—		
Atlantic, University 4-A	3522	3556
Crane County (Wildcat)—		
Magnolia, University 1, sec 16	14	3672
Crockett County (Crockett)—		
Choate & Hogan, University-Gulf 1-J	30	1592
Crockett County (Hoover)—		
Pitzer & West, Hoover 1-B	*	2055
Ector County (Foster)—		
Arrow Drl. Co.-York-Harper, Inc., Foster 2	1186	4275
Superior, Cowden 6	1463	4250
Ector County (Goldsmith)—		
Atlantic, Cummins 4-F	419	4295
Gulf, Goldsmith 96	280	4185
Humble, C. Scharbauer 12-C	984	4244
Mid-Continent, Slator 2	640	4264
Ector County (Harper)—		
Broderick & Calvert, Parker 8	2261	4250
Honolulu-W. A. Black, Cowden 7, sec 26	1149	4180
Wentz et al, Parker 1-C	1023	4126
Ector County (South Cowden)—		
Stanolind, Cowden 7-A	111	4109
Cowden 8-A, sec 23	1334	4169
Gaines County (Seminole)—		
Cope et al, Riley-Atlantic 1	250	5098
Howard County—		
Illinois Oil Co., Lane 7	668	2824
Sinclair Prairie, Dodge 56	†	2443
Jones County—		
Fain-McGaha-Sinclair Prairie, Swedish Church 2	966	3273
Danciger, Roberts 2	280	1943
Mack Hayes-Montour Prod. Co., W. L. Chittenden 1	190	3024
Healey & Walters, Daugherty 1	475	1919
Humble, Spencer 2	800	3291
Petroleum Prod. Co., Milsap 5	288	1956
Worsham et al, Commons 1-a	*	3396
Pecos County (Payton)—		
British-American, Cordez-Empire 2	293	2017
Pecos County (Pecos Valley)—		
Arnold Oil Co., Scharff-Blackman 2, sec 4	691	1834
Lown & Sanger, T. S. Jackson 1	140	1652
Pecos County (Wildcat)—		
Leidecker et al, Iowa Realty 1	*	2095
Taylor County—		
Wichita Prod. Co., Parramore 1	*	2035
Upton County (McCamey)—		
Continental, Reese 18	440	2350
Texas Co., King 40	*	2696
Ward County—		
Gulf, Estes 93	2252	2655
O'Brien 94	266	2770
Winkler County (Kermit)—		
Humble, Walton 10-B	236	3060
Winkler County (Keystone)—		
Falcon Co., McCutcheon 3-A	290	3318
Yoakum County (Wasson)—		
Denver P&R Co., Whittenburg 4-A	1062	5083
Yoakum County (Wildcat)—		
Gulf States Oil Co., Graham-Gulf 1	*	5375

*Failures; †Junked; ¶Million cu. ft. gas.

Cliffside structure test has Ellenberger objective

Amarillo, Texas.—Ellenberger lime series is the projected goal of a deep test to be drilled on the Cliffside structure, Potter County, by Sinclair Prairie Oil Company and Parcomis Oil Company on the Wm. H. Bush land, C SW SE BS&F Section 23, Block 6, about 14 miles northwest of Amarillo. The partnership holds lease on about 20,000 acres in the area, which is virtually proved for natural gas production from the Permian lime, with a portion of the structure supplying the United States government's nearby helium plant. Comparatively few Panhandle tests have been carried to the Ellenberger horizon. The drilling and casing program for Bush 1 provides for an 8000-foot test.

Indian lease sale June 7

Muskogee.—Oil leases on 163 tracts of lands of restricted, allotted Indian lands of the Five Civilized tribes in 23 Oklahoma counties will be sold at auction June 7 at the office of the superintendent here.

WEST CENTRAL TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Brown County—		
Hightower O&R Co., Mullins 2	*	1229
McCarter & Reynolds, Shults 1	*	1150
Ownby Drlg. Co., Tongate 1	*	2348
Selvidge et al, Perry 2	55	1235
Whitesides et al, Gilliam 1-a	63	2477
Callahan County—		
Hughes Pet. Co., Johnson 1	*	4336
Wooten & Beams Drl. Co., Dyer 1	*	1155
Coleman County—		
Anzac Oil Corp. et al, Sparkman 1	*	2308
Hood County—		
Parker et al, T. C. Stewart 1	*	764
Palo Pinto County —		
Goble & Moore Drl. Co., Costello 2-B	*	1409
Shackelford County—		
Baker et al, Davis 3, sec 30	*	1712
Bowles et al, Flippen 1	*	1198
Charter Oil Co., Mimms 12	20	1616
Hamer et al, Fincher 1	*	1405
Hoffman-Page Co., Morris-Buie 27	11	1605
Iron Mt. Oil Co., Ivy 2	750	3227
Jones et al, Dodson 8	*	720
Jones & Stasney, M. Davis 1, sec 29	*	1747
Keyes & Bailey, Tr., Diller 1-B	*	550
C. J. Kleiner et al, Morris-Buie 2	*	1713
Owens-Snebold Oil Corp., Ivy 4	125	1942
Poly Oil Co. et al, Spears 13	18	725
Spears 14	20	732
Roeser-Pendleton, Dawson 48, sec 202	82	1621
Roeser-Pendleton-Humble, Morris-Buie 11, sec 191	*	1790
Simmons et al, Harvey 16	18	1711
Ungren & Frazier, Harvey 2	30	1713
Stephens County—		
Browning & Murrey, Elliott 1	*	2014
Danciger, Copeland 1	*	4226
Lone Star Gas Co., Brooks 5	¶2.8	2175
Philtop O&G Co., Corbett 2	*	4095

*Failures; †Junked; ¶Million cu. ft. gas.

New Cooke County strike may extend into Oklahoma

Wichita Falls, Texas.—Northeastern Cooke County gained a new oil pool that may extend into Oklahoma on June 2 when Sinclair Prairie Oil Company's J. M. Best 1, Thos. Tody Survey, A-1054, swabbed and flowed 25 to 30 barrels of oil hourly from the Deese sandy-lime at 4887-95 feet. Location is 4 miles southwest of the little town of Coesfield and 1½ miles east of a deep bend in the Red River. The test was slated to drill to the 7000-foot level in order to explore the Ellenberger or Wilcox series. It is on a geophysically outlined structure that is credited with extending across the river into Oklahoma.

Equivalent to Strawn

The Deese horizon is the equivalent in age to the Strawn, which is currently in the spotlight at K-M-A. The discovery producer is the first deep test for the area, and has been rated as a good prospect on the strength of minor oil saturation logged at intervals since topping the green shale section at 2900 feet, with an elevation of 714 feet.

Majors hold lease on the bulk of the acreage in the area. Besides the discovery company, Magnolia Petroleum Company, Sun Oil Company, The Texas Company and Humble Oil & Refining Company are well protected.

Texas permits drop to 132 during week

The Texas Railroad Commission last week approved permits for drilling 132 new wells in Texas, 97 less than were allowed the previous week.

No permits were reported from the East Texas field. Operators in the East Central Texas area reported 16 locations.

Permits for drilling 25 new wells were approved in West Texas, including 13 in Ector County, while 21 were allowed in the West Central section, including 13 in Shackelford County.

The Gulf Coast area topped the list with 32 scattered locations, while operators in Southwest Texas were allowed 23 permits.

Panhandle producers listed six new locations, while operators in North Texas reported nine.

TEXAS PANHANDLE Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
British American Oil Prod. Co., Block 4	313	3131
Danciger Inc., Block 5	363	3318
Gray County—		
Champlin, Lovett 4	558	2990
L. R. Hagy-Harrington et al, Hart 1	¶21	2667
King Oil Co., Baer 4-C	268	3280
Hutchinson County—		
Kewanee Oil Co., Lewis 36	593	3096
Stayton Oil Co., Moore 5-A	280	3160
Texas Co., J. K. Quinn 9	668	3110
Ochiltree County—		
Macon et al, Norris 1	*	6274
Wheeler County—		
North Fork Oil Co., Jackson 6	95	2214

*Failures; †Junked; ¶Million cu. ft. gas.

North Texas Development

Northeastern Archer County Ellenberger test fails. Wildcat near Scotland flows 65 barrels from lime. Deep zone development at K-M-A is tapering off.

Wichita Falls, Texas.—Northeastern Archer County's prospective oil strike in the Ellenberger limestone drilled by Fain-McGaha Oil Corporation and Humble Oil & Refining Company on the Wm. Fuller tract, NEc H&TC Section 12, Block 1, failed to make a commercial well after acidizing and will be deepened. A saturated section at 5109-36 feet was rated good for 20 to 25 barrels of 43 gravity oil daily, with only a nominal gas show, after treating with 5000 gallons of acid under 1000 pounds pressure. A machine has been moved in to deepen the hole.

The second Ellenberger test given the Panther pool, north central Archer County, was listed as a failure when N. H. Martin & Son's L. F. Wilson 1, NEc lot 9, Section 25, drilled the lime section at 4988-5200 feet with insufficient saturation to make a well. It was deepened when the Strawn zone near the 3800-foot level did not prove favorable for production, although the site is only 3 locations west of the Panther pool's Strawn discovery. Blackwell Oil & Gas Company and Helmerich & Payne, Inc.'s Wilson 2, rated as a commercial producer from Ellenberger at 5116 feet, is installing machine to condition hole and swab through casing. Latest gauge credits this record depth producer for North Texas with flowing 60 barrels of oil by heads in 4 days, with 150 pounds tubing pressure, and 625 pounds closed in pressure on casing.

A more favorable outlook for Adams Oil & Gas Company's G. Moer 1, NWc Lot 21, Block 3, eastern Archer County, 1 mile east of Scotland, resulted from swabbing operations. The well flowed a 20-barrel head, and when swabbed partly down flowed 65 barrels oil and some water in 24 hours. Production is from sandy-lime, possibly lower Strawn, at 4152-65 feet. Top of big lime was called at 3448 feet, or 2490 feet sub sea. The hole has been plugged back to 4161 feet to exclude salt water indicated by an electrical formation survey.

Running High

Two north central Archer County Strawn wildcats commanded attention the past week as result of logging saturated lime. Westmount Oil Company's T. J. Dempsey 7, Block 10, League 4, Denton County School Land, mile northeast of Holliday, recorded saturation at 4137-65 feet. It is below the water level of the K-M-A field. R. O. Harvey and Sinclair Prairie Oil Company's J. J. Perkins 1, SW A. T. N. C. L. Section 7, 4 miles southeast of Mankins, registered a high structural position in logging top of lime at 3484 feet, or 2402 feet sub sea. Minor saturation was reported in oolitic lime, sand and shale section at 3550-3709 feet. Green shale was entered at 3726 feet. It will be carried to 4000-foot contracted depth. Phillips Petroleum Company, F. P. Hynes et al's J. C. Arthur 1, near NW NW SW GH&H Section 3, A-158, 4 miles south of Dundee, was drilling at 3925 feet, and if no production is found in the Strawn it may be deepened to the Ellenberger.

In southwestern Archer County, Camp Drilling Company et al's Harmel 1, SWc T. E. & L. Section 2460, is awaiting plugging orders after fulfilling depth contract at 4511 feet. Top of lime was called at 3494 feet, or 2267 feet sub sea. Harry Hines et al's J. L. Anderson 1, SWc Block 23, 2 miles north of the Swastika shallow pool, logged top of Palo Pinto at 3095 feet, or 1783 feet below sea level, and may plug back to test saturation found at 3118-58 feet after completing 4000-foot contract.

K-M-A Tapering Off

Development of the K-M-A deep area is tapering off in accordance with voluntary curtailment pledged by operators until market conditions improve. The current drilling report lists 240 operations, including 97 tests that are in process of completion or have reached the final casing point. The greatest decline is reflected by the total tests drilling between the two casing points, as only 34 operations fall within this classification. The field was credited with 26 new locations the past week, and 18 remained in this status to boost total locations to 80. Inactive tests account for 13 listings. Surface pipe has been cemented on 6 additional projects, and there are 10 derricks and rigs.

The Texas Company is without adequate pipe line facilites, although its affiliated carrier is absorbing the bulk of the field production. The former has 3 completed wells that have been idle for two weeks awaiting pipe line outlet and official proration gauge. Continental Oil Company registered its fourth producer in completing N. H. Martin 1-B, BS&F Section 11, A-387, flowing 51 barrels of 40 gravity oil in 3 hours through ¾-inch tubing choke after 50-quart nitro shot at 3797-3824 feet. Gas yield was rated at 240,000 feet daily, or 588 feet per barrel. Sinclair Prairie Oil Company's Martin 1, BS&F Section 12, A-744, is having difficulty in removing shot cavings after 90-quart nitro shot at 3767-3818 feet. This initial project for the company is carrying 500 feet of oil in hole while bailing mud and lime.

King Oil Company's H. Wigley 2, P. Castleman Survey, A-36, offsetting production in the northeast sector, passed up sand at 3740-53 feet that yielded several heads of oil, and is drilling hard sandy-lime at 4122 feet. This concern has two wells in the bed of the Big Wichita River that are awaiting potential gauge.

Geo. W. Cooper et al's Cunningham-Gulf 1, NWc H&GN Section 13, A-146, recent Ellenberger failure at 3790 feet, plugged back and tested salt water and trace of oil in saturated zone passed up at 2594-2635 feet.

NORTH TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (K-M-A)—		
J. A. Chapman & Ed. McFarlin, Ferguson 6, blk 3	1088	3872
Archer County (Panther)—		
N. H. Martin & Son, Wilson 1, lot 9	*	5200
Archer County—		
Hamilton Pet. Co., Wilkins 5-A	15	1145
W. L. Hawkins et al, Pace 8, blk 112	*	1235
Junker et al, Kunkel 3, lot 4	*	1172
Clay County—		
Brashear Drl. Co., Hansard 1, lot 8	15	1352
Bridwell Oil Co., Edrington 11	*	1436
Healdton O&G Co., Wallace-J. J. McKee 1, blk 33	*	5886
Metzner & Burns, Thornberry 1-A, blk 6	100	1119
Perkins et al, R. E. Sawdon 1	*	970
Cooke County—		
Merrick, Inc., Otto 6, blk 5	20	898
Mudge Oil Co., Johnson 25	40	1222
Murray et al, Trubenbach 6	30	913
Robinson et al, Otto 17-A	20	835
Schermerhorn Oil Co., Kessler 15, blk 5	30	1345
Texas Co., Trubenbach 8	42	750
Trumter Oil Co., Stacy 3	71	768
Stacy 4	52	792
Trumter Oil Co. et al, Andress 15	50	771
Foard County (Johnson)—		
Texas Co., Johnson 16, sec 37	¶5	3601
Haskell County—		
J. W. McMillan-Forest Dev. Corp., Pardue 1	115	2853
Jack County—		
R. D. Compton Oil Co., Henderson 17	10	340
Nelson Oil Co., Henderson 2	503	2799
Schafer et al, Hester 2	*	3001
Montague County—		
Continental et al, Hott 14	181	1757
Holcomb & Yingling, Hinton 4	12	789
Sinclair Prairie, Holt 1-B, blk 44	50	1681
Holt 3-B, blk 44	*	1772
Throckmorton County—		
Swain et al, W. McKeichan 1	*	726
Wichita County (K-M-A)—		
Bishop Oil Co., Waggoner Bros. 1-A, sec 11	880	3786
Blackwell O&G Co., Hodges 4	960	3880
Bridwell Oil Co., Pace 4	648	3877
Burk Roy. Co., S. Mitchell 2, lot 11	624	3873
A. L. Cato Oil Co., Kemp 4, lot 4	648	3768
J. A. Chapman-Ed. McFarlin, Mangold 4, blk 36	920	3837
Sparks-Mayfield 3	552	3911
Waggoner Bros. 4-A, blk 26	1120	3821
Continental, Waggoner Bros. 1-B-"C", lot 27	432	3830
Martin 1-B	408	3824
E. C. Oil Co., Mangold 3, blk 32	1104	3840
Fain-McGaha Oil Corp., Fain Bros. 5	744	3890
Fain Bros. 6	832	3802
Haberle & Thornton, First Nat'l Co. 2-A, lot 18	480	3819
King Oil Co.-Perkins-Cullum, Ferguson 4, lot 6	1800	3798
Lewis Prod. Co., Wichita Nat'l Bank 7	1120	3860
Alex McCutchin Drl. Co., Waggoner Bros. 1, sec 33	*	4024
Mitchell Oil Co., Mitchell 1, blk 13	600	3945
Peckham et al, Waggoner Bros.-Culbertson 2, sec 13	720	3868
J. J. Perkins-L. H. Cullum, Burnett 17-A, sec 2	*	3905
Staley Oil Co. et al, Mangold 1, blk 32	1128	3835
M. Staniforth & Co., Waggoner Bros. 1, sec 35	500	3845
Wichita County—		
D. H. Bolin et al, Waggoner Bros. 2-A, sec 21	10	929
Douglas Prod. Co., Douglas 21-E, sec 11	3	931
Mogren & Anderson, Mertens 5	125	933
Pois & Schultz, Foster-Allen 15-J, sec 2	140	727
Geo. Proctor et al, Foster-Allen 32-A, sec 1	*	1969
Reno Oil Co., Eads 16, sec 1	*	1962
Wilbarger County—		
Golding Est. & Cochran, Waggoner Est. 2-S, sec 30	30	1587
Lawson & Leavell, Waggoner Est. 14, sec 109	50	2440
Phillips, Waggoner Est. 203, sec 45	1200	3029
Waggoner, Waggoner 1-DD, sec 30	100	1545
Young County—		
Baker & Camp, Tr., Smith 4, sec 1365	*	895
Bennett et al, Robinson 3	*	4035
Duncan, Holt & Marchman, Benson 29, sec 1391	75	900
Thos. D. Humphrey, Alberts 1	50	3705
Knox & Clay, Robertson 2	275	3211
A. N. Munhall et al, Johnston 1	75	4616
Pameta Oil Co., Tatum 27, sec 1908	*	695
Parkin et al, Henderson 1, sec 1913	*	498
Watson et al, Routon 1-A, sec 243	*	846
Willis et al, Lowin 1, sec 278	*	519

*Failures; †Junked; ¶Million cu. ft. gas.

East Texas Fields

Drilling volume not curtailed by two-day shut down.

Salt water disposal becoming big operating item.

Kilgore, Texas.—Reduced earnings from wells in the East Texas field as result of the 5-day week production schedule has not materially curtailed drilling on inside locations. Currently the field has 57 rigs in operation. Drilling volume has ranged from a low mark of 49 late in April to a peak of 80 since the first of the year and has been steady for 4 consecutive weeks.

The decline in field work has not been as great as anticipated since numerous operators are adhering to the long practiced policy of financing new wells through oil payments. Continuation of the 5-day schedule through June, with no assurance of the production holidays being completely lifted after the mid-year date may discourage drilling contractors and others that have solicited turnkey well contracts for oil run assignments.

The base proration schedule allows an average of 20.2 barrels oil per well daily, with allowance made for sub-marginal wells. June production per well will aggregate a gross of 444.4 barrels as compared to a normal quota of 606 barrels for the month. No provisions are made for exceptions due to water. This extra production restriction involves 161.6 barrels, or 218.16 in gross revenue.

Shutdown Here to Stay

Restoration of the East Texas field to a 7-day week production basis will not occur when the statewide order is lifted. It is the only major field that has reached the saturation point in cutting back the output due to the terms of the marginal well law and the wording of the proration order that has withstood court attack.

Currently the field has an allowable of 509,092 barrels daily for the base schedule, from 25,149 wells. In recent months the harassed crude market has forced numerous independent purchasers to withdraw and surrender their well connections to larger interests. A few local refineries have likewise abandoned or curtailed crude takings and switched to lower priced crude obtainable by pipe line from Louisiana and Arkansas. Concentration of the field's allowable into fewer pipe line systems has a tendency to diminish competition. It will also cause the buyers to delay the submission of nominations that will permit the discontinuance of the Saturday and Sunday production holidays.

Proration discipline has improved since the number of pipe lines operating solely on state tenders declined. Owners of inactive wells and those that can not produce their marginal quota of 20 barrels per day are more prompt in reporting the individual well deficit on production when federal tenders are involved. Currently the field has 477 wells that are 3959 barrels short of their daily production quota that would be 9540 barrels under the marginal well law. There are 59 accounted for dead wells, and 63 dormant wells are classed as being off production.

Favor return of salt water to Woodbine in East Texas

Kilgore, Texas.—Salt water disposal problem in the East Texas field is commanding serious attention among the large operating units. Return of the brackish water to the Woodbine horizon through input wells on the west flank of the field, and possibly to the upper section of the Trinity series within the field proper is the most favored method of disposal. An experimental well situated to the west of the Joiner area, Smith County, proved that the water can be returned to the Woodbine after being subjected to chemical treatment.

Penetrating Paluxy

Initial penetration of the Paluxy sandy-lime zone, potential oil horizon, within the field proper is being made by Humble Oil & Refining Company's W. W. Holland 37, Thos. Allen Survey, near Gregg-Upshur County line. It was coring sandy-shale at 5129 feet, and is slated to cement 5½-inch casing in the Paluxy.

Sun Oil Company's H. A. Pace 38-B, failure drilled last January on west edge of the Joiner area, has been deepened from 3739 feet to 4007 feet, or 269 feet below the cap rock. Tubing has been landed to displace the column of salt water with filtered water before attempting to impound chemically treated salt water into the Woodbine.

Stanolind Oil & Gas Company has been authorized by the Texas Railroad Commission to convert R. A. Moores 3, J. B. Cadena Survey, Joiner area, into a Woodbine input well after deepening the hole. This well was completed May, 1932, from two feet of sand topped at 3638 feet, or 3303 feet sub-sea, and for some months has pumped in excess of 94 percent water. Ohio Oil Company, also a large salt water producer in the Joiner sector, has been authorized to convert J. H. Sharpe 21, Coy Survey, Cherokee County, into a water disposal unit. This well was completed August, 1933, from sand at 3693-95 feet, and is pumping 50 percent water.

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UNDERGROUND WELL SURVEYING SERVICE

EAST TEXAS Completions

Company, Well, and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Amerada-Deep Rock, Stovall 34 (193.86-ac)	4800	3638
Atlantic, J. E. Arnold 12 (35-ac)	1800	3720
British-American, Kangerga 7 (69.78-ac)	8000	3595
J. D. Stone 14 (66-ac)	7100	3607
Fischer et al, Eaton 22-B (21.52-ac)	4200	3770
Wilson 10-A (3½-ac)	4000	3760
Gulf, Keeling 8 (40-ac)	4000	3786
Humble, Florey 13-A (79½-ac)	10,500	3716
Turner 17-A (126.26-ac)	9800	3732
Hunt Oil Co., Thrash 12 (57.33-ac)	8800	3775
McMillan et al, M. A. Thrash 7 (13.4-ac)	5300	3773
Ohio, Mills 12 (44.37-ac)	1300	3727
Sinclair Prairie, Kinney 74 (579.21-ac)	6000	3847
Stanolind, Maxwell 39-A (108.52-ac)	4000	3765
Tide Water, Pool 6 (30.6-ac)	3600	3718
Kilgore Area—		
Bostex Oil Corp., Spear 5 (12½-ac)	6500	3566
Gulf, Spear 47, Tr. 2 (96.63-ac)	8800	3536
Jones-Atlantic, Wills 7 (41.64-ac)	6400	3612
Laird et al, Rice 2 (1.3-ac)	5200	3580
Mack et al, Daniels 1 (5.16-ac)	*	3621
Potter Bros. Prod. Co., Sparks 2 (2-ac)	120	3530
Russell et al, Lacy 8 (267-ac)	1200	3466
Shell, Douglas 21-A (94.95-ac)	2400	3580
Watson 72 (385.2-ac)	8700	3700
Watson 76 (385.2-ac)	9000	3642
Willoughby 19 (57.7-ac)	5400	3622
Shulman et al, Smith-Stanolind 2	360	3705
Ulmer-Livingston, Still 2-A (11-ac)	84	3537
Longview Area—		
Carr et al, Richey 5 (6.07-ac)	8300	3570
Deep Rock-Murphy, Pritchard 15 (110-ac)	10,200	3537
Lechner-Hubbard, J. B. Doby 6-B (19¾-ac)	9400	3506
Magnolia, Blackwell 14 (90-ac)	4200	3703
Tuttle 8 (48-ac)	8500	3614
Manziel et al, Mackey 9-A (59½-ac)	1500	3751
Producers Inv. Corp., Doby 4 (15-ac)	7800	3508
Stanolind, Castleberry 12 (77.44-ac)	3000	3604
Stanolind-Tide Water, Akin 17 (80-ac)	7700	3629
Key 17 (90.61-ac)	8800	3631
Persons 30 (151.18-ac)	7100	3518
Sun, Tate 12 (64.8-ac)	8700	3562
Tide Water, Davis 24 (133.8-ac)	10,100	3566
Henderson County—		
Johnson et al, Coffee 1	*	3493
Jones Drl. Co. & Hager, Coleman-Faulk 1	*	3395
Upshur County—		
Dupree et al, Lawrence 1	*	4308
Van Zandt County —		
Richards & Holloway, J. L. Chitty 1	*	4367
Marion County (Jefferson-Rodessa)—		
Holcomb & Thompson, Henderson B-2, U. Ewing sur	144	6070
Ohio, Moseley 2, Frances sur	288	6117
Shell, Henderson B-2, R. Bennington sur	240	6020
Union Prod. Co., Hutchinson 8, A. D. S. Coy sur	648	6151

*Failures; †Junked; ¶Million cu. ft. gas.

Southwest Texas Fields

Second Glenrose pool in making on Chittim ranch.

Heavy salt water flow in Carrizo Springs discovery.

Oil show in Frio County Edwards limestone test.

San Antonio.—Chittim ranch, Maverick County, apparently has a second Glenrose pool in the making. Wellington Oil Company of Delaware has acidized and is testing J. M. Chittim 1, about 3½ miles southeast of the Chittim field. The well is bottomed at 5688 feet with 5½-inch casing landed at 5471 feet. A porous section in the lime at 5485-5502 feet, showed some saturation.

The company recently completed a wet gasser in the same horizon to extend the Chittim field about 2900 feet to the east.

Maryland Corporation and Paul C. Teas' McKnight 1, potential discovery well of the Carrizo Springs field, Dimmitt County, encountered difficulty when the well started making a large amount of salt water to kill the gas flow. The test first attempted completion in sidetracked hole at 2465 feet when the water overcame the production. It will be deepened to about 2800 feet, the hole squeezed with cement and another completion attempted. The test is believed to be producing water from a shot hole created when the first well was shot with nitro.

F. L. Thomson, Jr., and D. M. Thomson's San Antonio Joint Stock Land Bank, Edwards limestone test being drilled about six miles northeast of Pearsall in Frio County, is waiting on boiler repairs at 5085 feet in the Austin Chalk. The well is showing considerable saturation at this level, possibly enough to make some sort of producer. It will be carried ahead.

Abandon Deep One

Humble Oil & Refining Company's Hillsman 1, deep prospect south of Paige in Bastrop County, has been abandoned in the Edwards limestone at 6737 feet. The test is in James Cunningham Survey. A second well is rumored for the district.

Red Bank Oil Company is pumping H. H. Coffield, discovery well of the Creisman pool in Burleson County. The well originally flowed at the rate of 19 barrels of oil per hour from 6172½ feet, but went dead. Fluid level is near the top of the hole and an excellent pumping producer is expected.

Active deep wildcatting program for Valley area

Mission.—A deep wildcatting program one of the most active in the history of the district, is in the offing for the Rio Grande Valley basin. Several more tests to below 7500 feet will be commenced immediately.

Wheelock and Collins are below 5000 feet in F. B. Guerra 1, on the La Reforma prospect. The test is scheduled to at least 7000 feet. The same operators shortly will commence an 8000-foot operation about 1 mile north of the Rio Grande and south of La Blanca field.

Sun Oil Company recently staked location for McKinney 1 in the Smith Survey, Starr County, another 7500-foot hole, while Phillips Petroleum Company is to immediately commence its 7500-foot operation in Samfordyce field, Hidalgo County. R. E. Harding and Pantano Petroleum Company are to commence a 7500-foot wildcat on the Kelly Pharr Subdivision, southwest of Pharr in Hidalgo County. The Pantano concern is completing Engelman 1-B, an east outpost well at La Blanca, Hidalgo County. It is making an oil producer at 7853 feet.

Sal Vieja Oil Corporation's Garcia 2, sole operation in Willacy County, was progressing below 9725 feet.

One field opened another looms for Duval County

Laredo.—One new field was opened and a second was in process of being placed upon production during the past week in the Mirando district. Both new strikes are in Duval County, one being in the Pettus sand and the other in the Cole series.

Magnolia Petroleum Company's Duval County Ranch Company 1, 8 miles northwest of Freer and about 2 miles southeast of the Charamousca field in Section 291, pumped 37 barrels on a 12 hour gauge. The test topped sand section at 1180 feet and is bottomed at 1190 feet with casing set at 1185 feet.

In Section 96, 5 miles southwest of San Diego, Arkansas Fuel Oil Company's Cuellar Brothers 1 is waiting on cement after casing was landed near total depth. The well found Pettus sand at 5110-36 feet and showed 550 feet of oil with about 125 feet of salt water and considerable pressure on a 15-minute drill stem test, the seat being at 5100 feet. The well was drilled to its 5500-foot Yegua contract and plugged back. This strike is the second in the Pettus sand in the northeastern portion of the county during the past several weeks. The other well was H. J. Porter's Fitzsimmons, a producer at 4304 feet.

Test encounters no showings below regular Alice pay

Corpus Christi.—Except for several attempts to extend present proven areas, the past week was a quiet one from a wildcatting standpoint in the South Texas Gulf Coastal District.

Conroe Drilling Company's Lindsay and Reed 1, Lavaca Grant, 4400 feet northwest of the discovery deep well of Alice field, Jim Wells County, drilled to 5606 feet and set casing after having failed to encounter any showings below the regular pay. The test is the deepest

SOUTH TEXAS

Completions

SAN ANTONIO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bastrop County—		
Humble, Hillsman 1, 4½ miles s Paige Townsite	•	6737
Western Gulf, H. A. Paris 1, 4 miles s Elgin	•	2936
Caldwell County—		
Coffield, J. Moore 3, Dale	•	2200
Ellmag, A. F. Geary 2, John Henry sur	16	2175
Martell, J. M. Young 8-E, Branyon	110	2339
J. M. Young 10-E, Branyon	79	2349
Owens and Van Wagnen, M. L. Smith 1, Branyon	•	2323
Prairie Lea, Merriwether B-7, Luling	50	2113
F. Shield, A. O'Banion 1, P. Martinez sur	•	1550
Taylor, W. Clark 5, Branyon	64	2343
Guadalupe County—		
Herring, C. F. Appling 1, Dunlap	55	2325
Medina County—		
Trentman and Merrit, Carle 1, V. N. Johnson sur.	•	1905

CORPUS CHRISTI DISTRICT

Bee County—		
McBride, Schneider 5, Plummer	151	3066
Brooks County—		
Standard Texas, Mestina 13, Alta Mesa	135	2522
Calhoun County—		
Fidelity, Foster 1, Lemuel Walker sur	•	6506
Portilla, Welder 17-C, Heyser	97	5469
Sinclair-Prairie, Bennett 13, Heyser	152	5626
DeWitt County—		
Hines, Boothe 1, 2 miles se Hockheim	•	3014
Goliad County—		
Goliad, Lutenbacker 3, La Bahia	•	5369
Jim Wells County—		
Coates, Lindsay and Reed 1, Alice	172	5358
W. J. Goldston, Lindsay and Reed 1	¶5 & 50	5370
Karnes County—		
Dirks, M. E. Choate 3, S. Burnell	250	3674
Live Oak—		
Gilcrease, I. Brannon 1, Simmons City Subd., sec 83	•	3004
Glasscock, State 2, Ezzell	45	1465
Nueces County—		
Barnsdall, M. B. Humphreys 7, Saxet	•	3750
Magnolia, Cryer 1, J. H. Gallagher sur	329	4086
Morgan, Fee 1-D, Saxet	•	7002
Richardson, Erigan 2, Shepherd Farm Lots	¶3 & 500	7999
Seaboard, Luby 6, Luby	500	5073
Luby 27, Luby	500	5067
Stanolind, McCann 10, Luby	500	4365
Spessard 3, Luby	500	5768
Refugio County—		
Hogan, Kelly 2, Refugio	•	6171
Houston, Pratt-Hewitt-Rooke 26	600	6203
Nordan, O'Connor 13-B, Tomoconnor	500	5924
Quintana, Heard 17, Tomoconnor	800	5945
Union, Lambert 72, Greta-Tomoconnor	1000	6200

LAREDO DISTRICT

Duval County—		
Douglas-Sullivan, State 1, Seven Sisters	•	40
Government, Lundell 25, Lundell	86	1510
G. J. Greer, Dinn 1, 8 miles ne Bruni	•	3522
Humble, Rossi 5-B, N. Sweden	600	5263
Magnolia, Duval 21 (59), Government Wells-Lundell	45	1486
Duval 1, (291), Casa Blanca	100	1190
I. G. Yates 1, E. N. Gray sur	•	4013
Well 2, Hoffman	85	2799
Republic, E. S. Buoy 8, North Sweden	600	4820
Reynosa, Welder 4-B, Seven Sisters	600	2637
Texon, Parr 3, Piedras Pintas	•	3651
Jim Hogg County—		
J. H. Meek, F. G. Martinez 4, Colorado	•	lcn.
Starr County—		
Graham & Kingwood, Yturria 2, Samfordyce	500	3197
Webb County—		
Killam, D. G. Garcia 17, Killam	80	2008
D. G. Garcia 29, Killam	122	2013
Windsor, McLandrich 3, T. T. RR sur 1005	81	2003
Zapata County—		
Buffalo, R. Hinnant 3-A, Hinnant subd., sur 116	40	1892

•Failures; †Junked; ¶Million cu. ft. gas.

in the field. It will complete in the sand section at 5241-58 feet. Another sand at 5262½-80 feet had a slight showing.

Humble Oil & Refining Company's Tarrant 1, Section 205, 5 miles southeast of the Howell producers, is drilling around 5100 feet, having passed through sand at 4898-4901 feet showing oil, gas and salt water.

J. W. Mayo, Incorporated's A. B. Wagner 1, south offset to Magnolia Petroleum Company's Beck 1, gas producer, is shut down for orders after showing oil and salt water in sand section 2518-29 feet. It is in the Telferner area of Victoria County.

Coastline Oil Corporation's State of Texas, Submerged Tract 320, was near 8600 feet, at which depth it is expected to set casing for a production test of upper levels. The well is in Red Fish Bay, about 2½ miles southeast of Aransas Pass and in Nueces County.

Several new wells were drilling ahead to the recently discovered 7300-foot sand in the Saxet field of Nueces County. None of the tests, however, have reached sufficient depth to give any light as to the extent of the producing area.

Shelby County well initials 15 barrels per hour

Shreveport. — Shelby Oil Company (Burnham and associates) appeared to have a commercial oil well assured last week in Windham 1, A. K. English Survey, Shelby County, Texas, near Shelbyville, where a small commercial well was completed some time ago and is still producing. Present test was acidized with 1500 gallons at 3422 feet and was swabbing and flowing 15 barrels of oil per hour with no trace of salt water. Pumping unit will be installed if the test will not flow.

Rodessa gas/oil ratio hearing June 14

Rodessa gas/oil ratios will be discussed at a hearing scheduled by the Texas Railroad Commission for June 14 at Austin. The hearing was called at the request of the United Production Corporation.

The company has advised the commission that gas/oil ratios of some wells producing in the field are excessive, and it is believed that this charge applies especially to wells which are not now connected to gasoline plants.

Texas Gulf Coast

Crosby prospect wildcat reported running high.

Wildcat now fishing may extend Fairbanks field.

Hankamer extension attempt tests salt water.

Houston.—Merit Oil Company's Grey Smith 1, Crosby prospect, F. Rankin Survey, Harris County, is being watched with much interest; reports are it is running 200 feet above normal. At the end of the week the well was down to 5932 feet in shale and coring. The wildcat will be drilled to 8000 feet and test back up the hole. Grey Smith 1 topped the Discorbis at 3672 feet, Heterostegina at 3795 feet, Frio at 3993 feet and Vicksburg at 5469 feet.

In the Deer Park area of Harris County, Jack Frazier and Bunte's Houston Deep Water Land Company 1, T. Earle Survey, was coring below 5550 feet in sandy shale at the close of the week. Salt water sands were logged in the wildcat from 5453 to 5454 feet and 5470 to 5475 feet.

Checking Favorably

About 7000 feet northeast of production at Fairbanks, Harris County, Union Producing Company's Goodykoontz 1, Wiley S. Powell Survey, was fishing for stuck drill pipe at 6758 feet. It is reported that the well is checking favorably with other wells at Fairbanks and stands a good chance of extending the field.

Friendswood field, Harris County, will be supplied with gas from Tomball field, Harris County, to drill future wells. Humble Pipe Line Company is constructing 9 miles of 8-inch line from the Tomball-Baytown 8-inch line to Friendswood. Humble Oil & Refining Company completed two good wells at Friendswood last week. Hermann Hospital 2 made 28 barrels per hour from 5820 feet and Beamer 8 made 25 barrels per hour from 6049 feet. The company has spudded in Houston Development Company 1, 1½ miles northwest of production at Friendswood. It is 1750 feet from the southeast line and 2640 feet from the southwest line of a 502.15-acre tract in the D. Putman Survey. Shell Petroleum Corporation is jointly interested in the test.

Good Well at Eureka

One of the best wells completed at Eureka field, Harris County, to date is Alamo Drilling Company and Houston Oil Company's Lackner 3, H. Reinerman Survey. The well came in flowing 30 barrels of pipe line oil per hour through a quarter-inch choke. Tubing pressure was 750 pounds and casing pressure was 1250 pounds. Lackner 3 logged sands showing oil from 7692 to 7730 feet; 5½-inch casing was set on top of the sand.

On the west flank of Humble field, Harris County, Crosby Drilling Company's Kornin 1, C. C. Shelby Survey, was abandoned at 5733 feet after failing to pick up any sands of importance.

Southwest of production at Cleveland, Liberty County, 1½ miles, Mayou and Chapman Minerals Company's abandoned Blanding 1, J. Eldridge Survey at 6119 feet. The extension well logged a sand with a gas odor from

TEXAS GULF COAST Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Cedar Point—		
Humble, State 2-95	624	5998
Conroe—		
Geo. Smith Tr., State School Land 1	*	3120
Dickinson—		
Humble, Leake 2	720	8082
Friendswood—		
Humble, Beamer 8	600	6049
Hermann Hospital 2	648	5820
Hardin—		
Atlantic, McMurtry 2-A	138	7705
McMurtry 1-B	334	7560
Gulf, Cessna 2	494	7593
Sun, Hissey 2	312	7708
Hastings —		
Stanolind, Brown B-8	702	5735
Guido 7	634	5641
Paul 19	517	5761
Hull—		
Guinn Oil Co., Abel A-10	44	591
Humble—		
J. D. Clay, Bender 21	270	1078
Crosby Dr. Co., Kornin 1	*	5733
Lochridge—		
Gulf, Baker 5	323	6364
Manvel—		
Wiltex, Richardson 1	*	6010
Orange—		
Ryan & Thompson, McGill 1	75	6123
Seabreeze —		
Sun, Seabreeze Land Co. 2	132	8824
Segno—		
Gulf, Regan 2	625	8168
Spindletop —		
Unity Oil Co., Roche 2	87	2678
Spurger—		
Republic, Hurd 9	576	7700
West Beaumont—		
Glenn H. McCarthy, Longe 9	130	5890
Liberty County—		
Mayo and Chapman, Blanding 1, sw flank of Cleveland, J. Eldridge sur	*	6119
Orange County —		
Texas Co., Lutcher Moore 1, Cow Bayou area, J. Jett sur	*	8399
San Jacinto County —		
J. W. Oliphant et al, Gibbs Bros. 1, nwc of county, C. McKim sur	*	6004

*Failures; †Junked; ¶Million cu. ft. gas.

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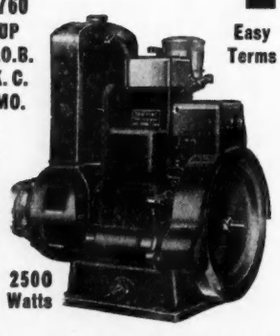

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5932 to 5937 feet and one with an oil odor from 5941 to 5954 feet.

Hardin Busy

Hardin field, Liberty County, witnessed one of its best weeks; four oil producers were completed and several more cored the oil sand and were waiting on cement to set. On the west side of the field, Sun Oil Company's Hissey 2, H. B. Johnston Survey made 312 barrels of pipe line oil daily through a quarter-inch choke from 7622 feet. Tubing pressure was 550 pounds and casing pressure was 1150 pounds. Four wells at Hardin are down to the sand and making production tests.

About 2500 feet south of production at Hankamer, Liberty County, Hankamer Oil Company's Moore 1, G. Stingler Survey, got salt water on a production test last week at 2934 feet. The well will be drilled deeper. Moore 1 topped sand showing oil at 2923 feet and was bottomed at 2934 feet.

In the northwest corner of San Jacinto County, J. W. Oliphant et al abandoned Gibbs Brothers 1, Chas. McKim Survey, at 6004 feet. No showings of importance were encountered.

Cow Bayou, Orange County, received another setback during the past week when The Texas Company's Lutcher Moore 1, S. Jett Survey, was abandoned at 8399 feet. Salt water sands were logged in Frio formation.

New Sand at Orange

Ryan and Thompson completed McGill 1 in a new sand at Orange last week. McGill 1, Wm. Dyson Survey, flowed 75 barrels of oil daily along with a large amount of salt water after casing had been perforated with 20 shots from 6118 to 6123 feet.

At Clam Lake in Jefferson County, Shell Petroleum Corporation's McFaddin 2, S. A. Pace Survey, was coring in heaving shale at 7475 feet. The well has logged several hundred feet of heaving shale.

In the North Cheek area, Jefferson County, Magnolia Petroleum Corporation was preparing to make a drill stem test of sands from 8443 to 8468 feet in Phelan 4, 933 feet south of Phelan 1. The hole was drilled to 8896 feet and was plugged back to 8600 feet.

At McCrosky field, Matagorda County, Pierce Estate's Fee A-3 logged oil sands last week and was preparing to set casing. The hole is bottomed at 6615 feet in sand showing oil. A drill stem test showed 750-pound pressure and 30 stands of oil cut mud.

West of the discovery well at Cedar Bayou, Chambers County, Standard Oil Company of Texas and Salt Dome Oil Corporation were running screen and liner in State 1-119 for a production test. Last week the operators plugged back to 6009 feet after showing salt water in deeper formation. Casing was perforated from 5974 to 5982 feet with 10 shots. A drill stem test made in 10 minutes through quarter-inch chokes and using a 2400-foot water cushion recovered 2700 feet of pipe line oil and the water cushion.

South Louisiana

Regain deep production honors with Terrebonne well.

Lafitte production extended north, probably northwest.

Lake Charles.—South Louisiana may regain its lost title of the deepest producing district in the world if Fohs Oil Company's Buckley Bourg 1, Section 77-19s-17e, Dulac area, Terrebonne Parish, makes a commercial producer at 13,333 feet. Up until a California well was completed below 13,183 feet, the Louisiana Gulf Coast was the deepest producing area in the world. Production was coming from 10,900 feet and one well flowed oil at 11,630 feet but finally died.

Fohs Oil Company's test is of interest because it is second only to a 15,004-foot well in California. Buckley Bourg 1 was drilled to 13,333 feet and an electric log warranted a production test. Five-inch liner has been set on bottom and 200 feet up into the 7-inch casing which is set at 11,640 feet. Plans are not to carry the hole any deeper but test will be made of all shows encountered. At 11,660 feet a 24-foot section of sand that may produce oil and has definitely shown gas was cored. The well will open some kind of a field at the 11,660-foot horizon and that will be the deepest producing well in South Louisiana and the second deepest in the world.

Fohs Oil Company is not satisfied drilling one deep well below 12,000 feet but has another at 12,480 feet in Terrebonne Parish—State Bay Baptiste 1, Section 41-19s-19e, which is being drilled deeper.

A new Oligocene sand was discovered three fourths mile from Choctaw, Iberville Parish, June 1, in Louisiana Crusader Oil Company's Schwing 2, Section 29-8s-11e, which came in flowing 600 barrels daily through ¼-inch choke with a tubing pressure of 1400 pounds and a casing pressure of 1200 pounds. The oil tested 37.4 gravity. The well was drilled to 8260 feet in shale. Oil sand was logged from 8250 to 8258 feet, and 6⅝-inch casing was set at 8240 feet. A previous test, Schwing 1, was drilled below 8400 feet, blew out, and was abandoned because of stuck drill pipe.

Also in Iberville Parish, Humble Oil & Refining Company's Wilbert 6 failed to make a producer in the 6999-foot sand and where coring deeper at the end of the week at 7030 feet. After coring sand showing oil from 6999 to 7011 feet, a drill stem test showed oil. After setting screen and liner it failed to flow, but swabbed oil and wash water, not in sufficient quantities to make a profitable producer.

The Texas Company is preparing to drill the Golden Meadows prospect in Lafourche Parish, which has been the scene of an exciting lease and royalty play for some time. The Texas Company found the dome last year when working with geophysical instruments. The whole town of Golden Meadows was leased. Location for the well is 3960 feet west and 1320 feet south of the northeast corner of Section 1-20s-21e. The company has spent over $500,000 on state leases in the Golden Meadows district this year. Catfish Lake, consisting of 3200 acres, is one of the leases taken. The company is reported to have paid $51,000 cash, $450,000 annual rental, $2,000,000 out of oil, and a 1/6 royalty.

The Texas Company also is preparing to drill Caillou Bay prospect in the Gulf of Mexico, south of Pelto Bay, offshore of Terrebonne Parish.

Tide Water Associated Oil Company has entered the Raceland field, Lafourche Parish, with location of South Coast Corporation 1, offset to Amerada Petroleum Corporation's South Coast Corporation 2.

Lafitte Extended

The Texas Company extended the Lafitte field north last week and was preparing to extend it northwest with another potential producer. The company's Lafitte 10, north of production, logged sand showing oil below 10,000 feet and was drilled to 10,191 feet in water sand. Casing was set on bottom and perforated with 197 holes from 10,005 to 10,045 feet. It came in flowing 1608 barrels of 35.9 corrected gravity pipe line oil daily through a ⅜-inch choke. Tubing pressure was 1400 pounds. On the northwest side, the company's Madison Realty Company B-1, Section 19-17s-24e, set 7⅝-inch casing at 10,205 feet and was waiting on cement to harden at the end of the week. The hole is bottomed at 10,266 feet.

The Texas Company has three operations in Iberia Parish, which are at interesting stages. At Fausse Point, State Lake Fausse Point 4, Section 25-11s-8e, was pulling tubing after it failed to flow

SOUTH LOUISIANA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Abbeville—		
Continental, Motty 1	504	6428
Bay St. Elaine—		
Texas Co., State 17	*	6000
Dog Lake—		
Texas Co., State 21	1347	6828
Jennings—		
Ladak Oil Co., Clements 5	35	2058
Superior, Leckelt 10	376	5256
Lafitte—		
Texas Co., Lafitte 10	1608	10,191
New Iberia—		
William Helis, Schwing 5	661	4954
Sulphur—		
Union Sulphur, Fee 860	135	5130
Villa Platte—		
Continental, H. Haas 1	441	9156
M. Haas 1	507	9098
Venice—		
Tide Water, Manhattan Fruit Co. 5	*	7290
Welsh—		
Humble, Stegall B-1	*	125
Acadia Parish—		
Humble, Finch 1, South Crowley, 22-10s-1e, dr to 10,222 ft, pb comp.	35	7315
St. Landry Parish—		
Western Gulf, Boagni 1, Sunset area, 7-8s-4e	*	9017

*Failures; †Junked; ¶Million cu. ft. gas.

at 9259 feet. Casing was perforated from 9229 to 9259 feet with 90 holes. On the flank of Jefferson Island salt dome, Bayless and Jones 1 was using the hole for geophysical work at 8635 feet, trying to outline the salt plug. In Vermilion Bay, the company was setting 2990 feet of 5¾-inch casing onto the 9⅝-inch, which was set at 7263 feet.

Fohs Oil Company is running 5-inch liner to 10,470 feet in State Lake Long 4 at Lake Long, Lafourche Parish, for a production test. Liner was set onto the 7-inch casing which was set at 10,239 feet. This well blew out two weeks ago at 10,239 feet and made an estimated 75,000,000 cubic feet of gas daily along with a large volume of distillate. This is a new sand for the field.

Gulf Oil Corporation recovered salt water from a new sand at Timbalier Bay, Lafourche Parish, last week when a drill-stem test was made. After logging sands showing oil from 6201 to 6222 feet, a test from 6195 to 6222 feet recovered little oil, 180 feet of mud, 200 feet of salt water, no pressure, through ¼-inch chokes in 8 minutes.

On the flank of the Convent salt dome, St. James Parish, Continental Oil Company has cored several hundred feet of hard and soft sand and last week was coring in sand at 6720 feet. A sand with a slight show of oil was logged at 6327 feet.

Another 11,000-foot well at Lirette is Union Producing Company's Unit 1, Section 50-19s-19e. After running electric log to 11,020 feet it was cored ahead and at the end of the week were down to 11,220 feet.

Two at Villa Platte

Continental Oil Company completed two producers at Villa Platte, Evangeline Parish, one of which extended the field southeast and the other east. M. Haas 1, Section 44-3s-2e, southeast of production came in flowing 507 barrels of 40.6 gravity oil daily from Sparta at 9038 to 9088 feet, through a 3/17-inch choke, with a tubing pressure of 1400 pounds and a casing pressure of 1325 pounds. H. Haas 1, Section 44-3s-2e, east of production, made 441 barrels daily through a 3/16-inch choke with a tubing pressure of 1200 pounds and a casing pressure of 1300 pounds from Sparta at 9078 to 9128 feet. The well is lower than other producers in the field.

Continental Oil Company definitely discovered a new sand at Abbeville, Vermilion Parish, when Motty 1, Section 65-12s-3e, came in flowing 504 barrels of 38.7 gravity oil daily through a ⅛-inch choke after casing was perforated with 10 shots from 6424 to 6428 feet. Tubing pressure was 1125 pounds; casing 1850 pounds. This is the third sand discovered in the field.

Continental Oil Company's A. Hebert 1, Section 67-12s-3e, Abbeville, Vermilion Parish, showed gas, salt water and sand on a production test at 8100 feet and has been killed for another test after salt water has been shut off.

On the southeast side of Jennings, Acadia Parish, Stanolind Oil & Gas Company made a drill-stem test on Houssiere Latrielle 19, Section 47-9s-2w, and recovered mud. After drilling to 8438 feet in shale and making an electric test, a cement retainer was set and casing perforated with 48 holes from 7764 to 7769 feet. In 30 minutes the recovery was 40 barrels of mud. Perforations were squeezed with cement and next week casing will be perforated from 7672 to 7692 feet.

Contract first of nine Arkansas-Tennessee tests

Jonesboro, Ark.—Tenn-Ark Oil Company has let contract to Joe Modisett, Shreveport, drilling contractor, for the first of a series of nine tests to be drilled on that number of separate blocks of acreage in northeast Arkansas and west Tennessee, the tests to be drilled to depths ranging from 3000 to 7000 feet. The first of the tests will be drilled four miles from Jonesboro. This company has over 100,000 acres under lease in its nine spreads.

Modisett is moving in a heavy rig used on a deep test in southwest Alabama.

Iran output

Production of crude oil in Iran during March amounted to 1,078,393 metric tons, according to figures received from Anglo-Iranian Oil Company, Limited. This makes Iran's production for the first quarter total 2,682,222 tons. Converted on the basis of one ton to 7 barrels, the first quarter's production amounts to 18,775,554 barrels.

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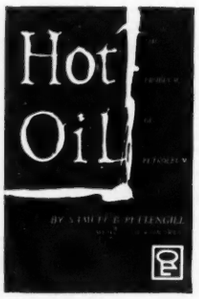

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North Louisiana Fields

DeSoto Parish wildcat has showing for wet gas well.

Lisbon extension try misses sand at 5852 feet.

Shreveport.—The Hunter Company's Parker 1, SW SE 26-12n-16w, DeSoto Parish wildcat near Logansport, was showing for a wet gasser during testing operations Wednesday after 5-3/16-inch casing, cemented at 5139 feet, was perforated from 4950 to 5030 feet. Total depth is 5187 feet.

This test logged saturation from 5025 to 5083 feet before casing was cemented. The formation being tested in Glen Rose.

S. S. Alexander's Stell 1, NE NE 5-12n-16w, in the same parish, was flowing oil by heads while being tested in Glen Rose lime at 5440 feet.

The Holloway (Travis Peak) horizon at Cotton Valley, Webster Parish, added its thirteenth oil well last week when Ohio Oil Company completed Bodcaw 50, Account 3, C SW NW 34-21n-10w, flowing 18 barrels per hour through ⅛-inch tubing choke. With elevation of 224 feet, this test logged Travis Peak saturation from 5724 to 5755 feet. Total depth is 5760 feet.

The Louisiana Conservation Commission continued the 4000-barrel daily allowable for June for Cotton Valley wells producing from this horizon, with 3000 barrels daily allotted to acreage and 1000 barrels to potential production. The total potential of 11 wells completed prior to May 25 is 11,126 barrels and acreage of oil wells in this horizon is given as 440 acres. The individual per-well daily allowable ranges from 262 barrels to 413 barrels per day.

Trouble with parted casing and hung swab delayed testing last week of E. T. Oakes and Associates' Kilgore 1, NE SE 28-21n-5w, 1½-mile northwest outpost in the Lisbon field, which had logged 13 feet of saturation in basal Glen Rose lime.

Lisbon Extension

One fourth of a mile southwest of a 2-mile southwest outpost producer at Lisbon, Weaver Oil Corporation's Edmonds 2, SW NE 16-20n-5w, which logged only fair saturation from 5375 to 5383 feet in basal Glen Rose lime, and drilled to 5852 feet, 222 feet in Travis Peak without picking up any showings, is shut down, and may be plugged back and acidized at 5375 feet.

The area allotted to oil wells in the Lisbon field for June totals 5,232.3 acres, as compared to 4,632.3 acres allotted to oil wells for May, according to the Louisiana Conservation Commission's June allowable order.

Of the 10,000 barrel total field allowable for Lisbon for June, 7500 barrels is allocated to acreage and 2500 barrels to bottom-hole pressure, the acreage factor being 1 acre equals 1.43340 barrels. Total bottom-hole pressure for June is given as 206,947 pounds as compared to 191,791 pounds for May. The allowables are based on 224 wells for June as compared to 206 wells for May.

Figures given in the June allowable for the Louisiana side of Rodessa reveal that of the total of 482 wells on the Louisiana side of the field, 387 are classed as oil wells, 76 as "new gas wells" and 19 as "original gas wells." The net oil allowable for the field, Louisiana side for June, is 40,000 barrels, this being the field total of 46,199 barrels less 6,199 barrels classed as allowable for deficient wells.

Sixty wells producing from the Young, Dees and Gloyd horizons are classed as gas wells and given a total gas allowable for June of 24,124,890 cubic feet daily. The daily gas allowable given to oil wells is 128,323,600 cubic feet. The average daily gas allowable per oil well is 337,694 cubic feet. The weighted average bottom-hole pressure was given as 1493 pounds.

Claiborne Wildcat Gasser

Three fourths of a mile northwest of Sugar Creek production, Union Producing Company's Coleman 1, SW SW SE 30-20n-5w, Claiborne Parish, was completed in Travis Peak as a 30 million-foot gasser with a spray of oil, after casing was perforated from 5798 to 5847 feet. Rig is being moved to Rufus Sims 1, SE SW 29-20n-5w.

Magnolia Petroleum Company was preparing to perforate 7-inch casing set at 9464 feet where it hung, in Frank Sexton 1, C SW NE 32-23n-9w, Webster Parish, Shongaloo district. Total depth is 10,462 feet. Electrical device was run Tuesday. It was planned to perforate casing first at 8892 feet where a gas and distillate showing was logged in 20 feet of sand showing 19 percent porosity.

Testing was also due during the week-end in Stanolind Oil & Gas Company's Pardee 1, C SW NE 36-21n-10w, 1½ miles southeast of lower Marine (Bodcaw) gas distillate production at Cotton Valley. Total depth is 8635 feet. With elevation of 176 feet this test logged 14 feet of gas-distillate saturation from 8592 to 8606 feet. In a core from 8612 to 8622 feet, recovery was 8½ feet of medium porous sand with

NORTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo Parish (Pine Island)—		
Midfield Oil Co., Muslow 1, 6-20n-5w	250	1600
Claiborne Parish (Sugar Creek)—		
Union Prod. Co. et al, Coleman Unit 1, 30-20n-5w	¶30	5847
La Salle Parish (Urania)—		
Petroleum H&P Co., Biggs 1, 26-10n-1e	10	1532
Sabine Parish (Converse)—		
Royal O&G Co., Frost A-3, 19-9n-13w	53	1961
Webster Parish (Cotton Valley)—		
Ohio, Bodcaw 50, Acct. 3, 34-21n-10w	432	5760

*Failures; †Junked; ¶Million cu. ft. gas.

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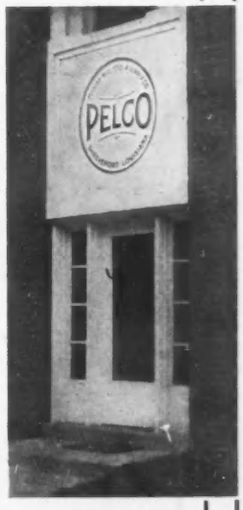

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odor of gas, 2 feet of hard tight sand, and in a core from 8622 to 8635 feet, 2 feet of hard sandy lime was recovered, the rest of the core being poker chip shale. Asphaltic sand showed in the core from 8577 to 8588 feet with a slight gas odor. A slight salty taste was noted in the core between 8588 and 8602 feet.

Joe Modisett and Standard Oil Company of Louisiana's Frost Lumber Company 1, C NE SW 14-21n-1e, Union Parish, "in the Schuler Trend," which logged top of Permian lime at 9612 feet, cored to 9637 feet and recovered hard dense lime, drill pipe later being stuck at 9625 feet. Efforts were being made to dislodge.

R. M. Hutchins and Associates' A. N. Sample 1, located 1840 feet south and 1400 feet east NWc 11-14n-11w, DeSoto Parish wildcat, was completed last week in Ozan sand at 1782 feet, making an estimated production of 3 to 5 million cubic feet of gas daily. M. J. Kissick of Shreveport was drilling contractor. Plans for further development of the block, which is 10 miles from nearest production have not been announced.

G. H. Collins of Houston, has spudded a test, Joyner 1, SW NE 28-11n-12w, DeSoto Parish, in the same section where Pearl Oil Corporation of which Collins is an officer, drilled a test several months ago, which had a showing of oil at 2880 feet.

W. L. McClanahan's Frost Lumber Company 1, SE NE SW 22-9n-13w, a 5700-foot test, east of shallow production at Converse, Sabine Parish, cemented 9⅝-inch casing last week at 1578 feet. Considerable gas showed in the Nacatosh.

F. W. Martin & Company are drilling below 2250 feet in Sabine 1, C W½ NE NE 23-7n-14w, Sabine Parish, east offset to J. G. Sutton's recently completed 965-barrel oil well, at 4208 feet. Martin's test set 9⅝-inch casing in chalk at 2150 feet. It is the first of 7 new locations in this area to start drilling.

Memorial tablet

A cairn and tablet will be erected this summer at Oil City, Ontario, to mark the first flowing oil well and the beginning of Western Ontario's once great oil industry, it was announced recently by Professor Fred Landon, University of Western Ontario.

Arkansas Fields

Arkansas' deepest plugged back for Permian producer. Latest Columbia County strike choked to 200 barrels.

El Dorado, Ark. — The Permian lime's third producer in the Schuler field, Union County, was completed last week in Phillips Petroleum Company's Justiss 3, C lot 6, NW 18-18-17, which set a new depth record for Arkansas by drilling to 8328 feet, before plugging back and setting 6⅝-inch casing at 7800 feet which was perforated from 7646 to 7653 feet, and was completed flowing 23 barrels of oil per hour through 28/64-inch tubing choke. Elevation is 248 feet.

With completions through Wednesday of last week, the Schuler field now has 47 Jones sand (Lower Marine) oil producers and 61 producers counting Travis Peak, Lower Marine and Permian wells.

Standard Oil Company of Louisiana's W. P. Phillips 1, C SE NW 15-17-19, Columbia County wildcat near Village, completed May 27, flowing 76 barrels per hour through ⅜-inch tubing choke, was choked down last week to 270 barrels daily flowing for four hours through ⅛-inch choke and the other 20 hours through 3/16-inch choke. Casing pressure was 2700 pounds, and tubing, 1900 pounds. The allowable for Village has been set at 200 barrels per well per day for the present by the Arkansas Board of Conservation and the well was further choked later in the week to come within the allowable. Oil from the well is being hauled by truck to El Dorado. The well is producing from Permian lime from 7420 to 7430 feet following perforation with 100 shots.

Fourth Strike

This is the fourth Permian lime strike in the Buckner-Schuler trend in South Arkansas, the four areas producing from that horizon now being: Buckner, with 4 wells, all owned by Standard Oil Company of Louisiana; Magnolia, 1 well, completed by Kerr-Lynn Oil Company and sold to Atlantic Refining Company; the Village well, and Schuler.

Although some geologists hold that the Magnolia and Village wells, which are five miles apart may be on the same structure, the predominant opinion is that they are on separate structures.

Discovery of oil at Village may cause Standard Pipe Line Company to lay a line from El Dorado to Buckner via Schuler, Magnolia, and Village. Buckner, Magnolia and Village have no pipe line outlets and Schuler has only one outside buyer, Root Petroleum Company, which is holding its purchases to 125 barrels daily per well. Lion Oil Refining Company owns the only other line outlet at Schuler and takes only its own oil or that of wells in which it owns an interest.

Control Output

However, it is regarded as certain that Standard Pipe Line Company would connect into no production unless the owners agree to hold production to the allowable, which in all the fields mentioned is 200 barrels per day per well.

Discovery of oil in the Permian lime at Village followed close on the discovery at Buckner last November 30 and in consistent order, both being geophysical locations, with Standard Oil Company owning practically all close-in acreage. It will develop these fields consistent with the demand. So far it has made no new locations at Village and has only one test drilling at Buckner.

At Magnolia, two companies will make locations soon. Shell Petroleum Corporation had engineers on the ground at Magnolia Wednesday, surveying lines preparatory to making location.

Phillips Petroleum Company has a geophysical unit working in the vicinity of Kerr-Lynn Oil Company's Barnett 1, Section 14-17-20, near Magnolia.

In the last five weeks Shell Petroleum Corporation has leased over 1000 acres north of McNeil and west of Stephens and Darby Petroleum Company has also been active in the same area.

F. W. Martin & Company has acquired 7500 acres centering around Section 1-14-25, Hempstead County. In the same county Ohio Oil Company has a shooting unit in Township 14, Range 26.

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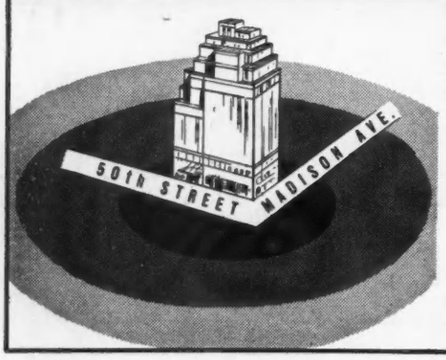

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ARKANSAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia County (Village)—		
Standard, Phillips 1, 15-17-19 ...	270	7603
Miller County (Rodessa)—		
F. W. Burford, Mitchell 1, 11-20-28	480	6145
Thomas B-2, 12-20-28	35	6125
Nevada County (Wildcat)—		
Union Drlg. Co., Fuller 1, 5-13-21	*	1433
Union County (Schuler)—		
Marine Oil Co., Fee 5, 17-18-17...	1440	7595
Lion, Mayfield 2, 18-18-17	960	7643
Phillips, Justiss 3, 18-18-17.....	975	7653
Marine 5, 20-18-17	288	7650

*Failures; †Junked; ¶Million cu. ft. gas.

Illinois Developments

University of Chicago 2 dampens hopes of field north of Olney . . . Several tests at critical depths

Olney, Ill.—Pyramid Oil Company's University of Chicago (Bird Haven) 2, Section 23-4n-10e, is reported dry to 3137 feet, thereby materially dampening hopes of building an oil field north of Olney. The well is two locations northeast of the good flowing No. 1, the pool opener completed after several dry holes were drilled in the area last winter. No. 2 was subjected to an electric test and core analysis, both indicating insufficient McClosky saturation to make a well. Now temporarily shut down, it may be carried down for a test of the St. Louis or other deeper formations.

Several other tests in the area are nearing the completion stage: The Texas Company's Zerkle 1, north offset to University of Chicago 1 and two locations west of No. 2, had casing set above the McClosky and was preparing to drill into the producing horizon. The same company's Zerkle 2 was drilling at 2800 feet, and Zerkle 3 was below 1100 feet. Muhlbach's G. O'Donnell 1, Section 26-4n-10e, was drilling at 2900 feet. Pyramid Oil Company has a second north Olney well in G. Slv 1, Section 22-4n-10e, which was drilling at 2500 feet.

Among new tests about to start in this area were S. Raitman's G. O'Donnell 2, Section 26-4n-10e, rigging up; Fortney Oil Company's E. G. Miller 1, Section 26-4n-10e, location; Sylvester et al's A. E. Bunn 1, Section 26-4n-10e, derrick materials on location; David L. Cooley et al's Warren Bellinger 1, Section 34-4n-10e, within the Olney city limits, derrick up, and Pyramid Oil Company's E. J. Houser 1, Section 15-4n-10e, location.

Carter Oil Company set casing to 4247 feet in W. C. Cox 1, deep test on Section 14-4n-5e, Oskaloosa township, Clay County. The well is at 4306 feet. Whether a test of the Devonian will be made when the cement hardens, or the test continued to its goal of 5500 feet, remained in doubt. Tight saturation was found for some distance in the Devonian. The test, first to probe the lower horizons in the basin area, is being closely watched.

One and one half miles north of Flora, Kingwood Oil Company's F. Graham 1, wildcat on Section 13-3n-6e, Harter township, Clay County, swabbed at the rate of 10 barrels an hour with considerable cleaning still to be done. Announcement of several offsets is expected this week, acreage being well scattered between several majors and independents.

Two other highly important wildcat tests, both on the Clay-Richmond County line, were nearing the completion stage. Ohio Oil Company's D. Negley 1, Section 24-4n-8e, Pixley township, Clay County, lost some time with a twisted-off drill stem at 2990 feet but was coring for the McClosky at 3000 feet at last report. J. V. Wickluns Development Company's W. R. McCauley B-1, Section 7-2n-9e, southwest Decker township, Richland County, had casing set above the McClosky and was preparing to drill in with cable tools.

The thirteenth well in the Beecher City field, Sam Jarvis' S. Mize 1, Section 21-8n-3e, extended the field more than a mile to the southwest. It is producing from the Eboist sand at 1443 feet. The first dry hole is still to be drilled in this field, opened several months ago by Carter Oil Company. This company holds most of the acreage in the area.

Iroquois Oil & Gas Company will start the first Moultrie County test within 30 days on a 5000-acre block in East Nelson and Sullivan townships. Exact location of the wildcat has not been chosen, but it will undoubtedly be west of Allenville in East Nelson township, it was announced. Moultrie County is to the north of basin area counties now receiving the bulk of the play.

Show in Nebraska

Agate, Nebraska.—Union Oil Company of California's Buckley 1, Section 15-28n-55w, Sioux County, northwestern Nebraska, encountered a showing of oil in the Lakota horizon and was drilling on below 5400 feet. It is on the Agate anticline.

ILLINOIS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Clark County—		
Stipes et al, Wilhoit 1	¶25	296
Miller et al, Wilhoit 1	*	406
Clay County—		
Pure, Bunn Consolidated 1	983	3035
Clinton County—		
Illinois Prod. Co., Buettner 1	396	1385
Thompson & Self, Hauseman 2	250	1389
Shell, Allison 2	71	1384
Allison 3	35	1391
Allison 4	206	1390
Huff, Stouffer & Boughten, Beasant 1	175	1376
Lilly et al, Penn 2	160	1386
Rourke & Moore, Home Building & Loan 1	140	1381
Adams O. & G. Co., Baker 2	112	1382
Keister 1	54	1376
Thompson et al, Chamber of Commerce 1	90	1393
Carpenter et al, Armon 1	65	1378
Bartelso O. & G. Co., Schlarman 5	50	999
Fayette County—		
Carter, Main 1	480	1558
Larimore 1	90	1586
Jefferson County—		
Carter, Free 1	220	1988
L. Breeze 1	100	1950
Marion County—		
Gill et al, Illinois-Iowa Power Co. 1	480	1375
T. T. Eason, Mayer 1	300	1376
Campnells, Marshall 1	200	1369
John Pugh, Bagley Infirmary 1	190	1375
Patterson & Doran (Hastings et al) Burgess & Gambill 1	165	1389
Cooper & Lacy, Pick 1	160	1390
D. D. Huddleston, McKee 1	150	1380
Penn-Illinois Oil Co., Delay 1	130	1410
J. D. Reynolds, R. Hough 1	85	1389
Richland County—		
Pure, Fleming 1-B	272	2980
Coen 15	89	2967
Wade 2	80	2984
Ohio, Schilling 2	564	2966

*Failures; †Junked; ¶Million cu. ft. gas.

MISSISSIPPI
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Rankin County (Jackson)—		
Willmut G&O Co., Fee 6, 6-5n-2e	¶35	2361

*Failures; †Junked; ¶Million cu. ft. gas.

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Eastern States

Thin, tight sand shows new Kentucky pool limit.

New wells added throughout area fall off sharply.

Pittsburgh.—Kentucky Natural Gas Company's O. Haynes 1, in the new Birk City pool of Henderson County, Kentucky, encountered only 2 feet of tight McClosky saturation which was not believed to be capable of commercial production. Hole was carried to 2100 feet, and preparations were being made by Thompson Drilling Company to move the rotary rig to another location. Definite announcement as to disposition of the test, which is a mile southwest of Hoosier Drilling Company's C. T. Blackwell 1, McClosky sand discovery, was not immediately forthcoming. It apparently forecasts limits of the new pool in that direction.

Besides Kentucky Natural Gas Company's test, 4 wells were drilling in the area with 2 others about to start. Hoosier Drilling Company's C. T. Blackwell 2 was taken to 1853 feet with a rotary, and preparations were underway to drill in with a cable rig. This company's C. T. Blackwell 3 was below 690 feet and No. 4 was preparing to start. Hupp et al's J. Gatewood 2, 544 feet from the J. Gatewood 1 and an offset to Carter Oil Company's O. L. Boswell 1 which had an initial of 500 barrels daily, was drilling below surface pipe at 150 feet. Another new start of the past week was Snowden & McSweeney's F. Dempewolf (T. Jones) 2, being drilled by John Pugh Drilling Company. F. Dempewolf 1 has been producing at the rate of 700 barrels daily. Carter Oil Company was preparing to start O. L. Boswell 2, the company's second of a four-well program for this area.

In Daviess County, east of Henderson and across the Green River, Major Oil Company's O. Greer 1, one of three tests which may indicate whether the pool extends into that county, was nearing the McClosky depth. It is a half-mile east of C. T. Blackwell 1. Jesse Ashby's cable rig on the Sapp lease sunk into the ground when a quantity of quick sand was bailed from the hole. It was preparing to resume. Third test on the Daviess County side will be drilled by O. Jenkins, who has moved a cable rig to the 160-acre James farm.

Two miles south of Corydon, Southwestern Henderson County, Kentucky Natural Gas Company's R. H. Trigg, Sr., 1, being drilled by Miller Drilling Company, was below 400 feet.

I. B. Browning et al's J. R. Ramsey 6, deep wildcat test in Webster County, Kentucky, was drilling at 2000 feet. Its objective is the 3200-foot level where a strike was made in the vicinity in 1914. In this county, Powell Drilling Company's A. B. Sellers 1, 2 miles northwest of Sebree, was completed at 900 feet and gauged 1,680,000 cubic feet of gas. It had a rock pressure of 330 feet.

Hunsaker & Hobbs started the first Hopkins County, Kentucky, deep test on the Cox farm, 5 miles southeast of Madisonville. The McClosky is expected at 1900 feet, and if commercial production is not obtained at that level, the test will be carried to the Bethel sand at about 2500 feet. That section of Hopkins County is heavily leased and other tests are expected to start soon.

Indiana

In Posey County, Indiana, Sun Oil Company's S. Dietz 1, Section 1-7s-12w, Marrs Township, drilled by Staves Drilling Company, encountered an oil show at 1741 feet, which, when deepened to 1744 feet, was capable of yielding 30 barrels a day. Preparations were made to deepen 200 feet for a thorough test of the formations. Casing was being set. Carter Oil Company's C. Graulich 1, Section 4-7s-14w, Black Township, 7 miles east of Mt. Vernon, was drilling below 2600 feet, with the Bethel sand expected in another 100 feet. Three oil shows had been encountered at higher levels.

Arthur Grewe and August C. Kruse have announced a test for Campbell Township, Warrick County, Southwestern Indiana, to start this month on their block of 2000 acres in sections north, east and south of Millersburg.

Completions Off

Recorded completions in Eastern States dropped in all sections last week with the exception of Kentucky, where 19 tests were reported compared to 14 in the previous week. Among the past week's completions were 12 oil wells with an average initial production of 177 barrels daily, 5 gas wells and 2 dry holes. Ohio completed operations dropped 5 to 9, including 4 oil wells with an average initial of 3 barrels daily and 5 gas wells. In West Virginia, completions dropped from 10 to 7, of which one was an oil well with a 20-barrel initial, 1 was a gasser and 5 were dry holes. Pennsylvania completions comprised 2 gas wells, a decline of 2 from the previous week's 4 completed operations.

EASTERN FIELDS
Completions

OHIO

Company, Well and Location	Init. Prod. Bbls.	Depth
Athens County—		
A. D. Townsend, Niggemeyer 3	¶.30	1721
Guernsey County—		
Geo. Kernodle, Tedrick 1	¶.95	1391
Licking County—		
E. Ridgeway, Richards 1	5	790
Armbruster, Miller 1	¶.05	750
Meigs County—		
W. G. Reed, Renshaw 2	¶.34	874
Perry County—		
Big Run O&G Co., Weaver 2	2	1071
Ira Coffman, Marshall 2	2	1110
Seneca County—		
Homer Martin, Martin 6	¶.05	1432
Washington County—		
Gales Oil Co., Gale 7	5	1802
KENTUCKY		
Butler County—		
Ellis et al, Hayes 1	*	1417
Daviess County—		
McDonough & Co., Cooper 3	50	766
J. C. Ellis & Ashby, Rhoades 8	25	....
Daugherty & Ellis, Berkley 1	20	....
Floyd County—		
B. L. Sturgill, Layne 1	50	....
Fred Williams, Honaker 3	¶.28	2720
Stanley 5	¶.10	2790
Kentucky-W. Va. Gas Co., Neeley 570	¶.08	2705
Hancock County—		
J. C. Ellis, Richards 18	50	435
Henderson County—		
Carter, Boswell 1	500	1887
Snowden & McSweeney, Dempewolf 1	500	1873
Kentucky Nat. Gas Co., Major 1	860	860
Hupp et al, Gatewood 1	50	1914
—Lawrence County—		
Rockcastle Gas Co., Ball 2	¶	....
Lee County—		
J. C. Ellis, Tipton 2	5	465
Thos. Wittmer, Tipton 11	5	....
McLean County—		
J. C. Miller, Foley 11	*	....
Martin County—		
Warfield Gas Co., Newberry 4733	¶.50	2700
Ohio County—		
Rex-Pyramid Oil Co., Ambrose 15	5	639
WEST VIRGINIA		
Calhoun County—		
South Penn Oil Co., Sharpes 3	20	2170
A. R. Stump, Stump 2	*	1925
Doddridge County—		
Henderson Oil Co., A. Liggett 1	*	2096
Gilmer County—		
Massey & Jarvis, Tierney 1	¶.10	1238
W. H. Mosser, Gragg 1	*	2360
Ritchie County—		
H. M. Deem, Fowler 1	*	1965
Wirt County—		
J. N. Cullum, Fee 1	*	486
PENNSYLVANIA		
Greene County—		
Equitable Gas Co., Morris 405	¶.25	3068
Washington County—		
Coleman et al, Pittsburgh Coal 1	¶1.00	996

*Failures; †Junked; ¶Million cu. ft. gas.

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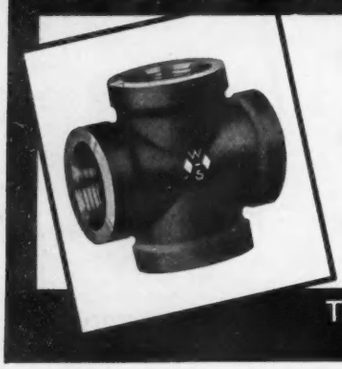

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ROSELLE, NEW JERSEY

Michigan Fields

Buckeye and Sherman-Broomfield production extended. Hearing on drilling and production called for June 9.

Mt. Pleasant, Mich.—Two comparatively small extension producers on flanks of old fields constituted the bulk of noteworthy development in Michigan during the week on the positive side while 11 failures contributed heavily on the negative. Besides the recorded failures, at least a half dozen other tests early in the week, located in territory previously held promising, appeared slated for junking.

F. O. Whitelow's Campbell 1, Section 27-18n-1w, on the west flank of the nearly two year old Buckeye field, Gladwin County, developed a 128-barrel natural production to offer drilling of between 20 and 30 new locations. On the south flank of the Sherman-Broomfield pool, Isabella County, Pure Oil Company's Wille 12, Section 4-14n-6w, acidized to 108 barrels from a 300 barrel natural show and was being placed on the pump for regular production this week. It is a half-mile south of previously established 3700-foot Monroe lime production in the field.

Operators are failing to show any "boom excitement" relative to Norton & Kramer's deep Monroe lime producer in the Michigan's "Thumb," where three weeks ago an estimated 40-barrel natural flow production from 3418 feet was developed. Test is located in Section 30-14n-8e. This week operators had tubing out and were swab testing after production dropped to about 15 barrels after the first week, when it averaged between 35 and 60 barrels, flowing through 2-inch tubing. It appeared possible, with 5-inch casing set only to 3238 feet, that the hole had caved.

Mt. Pleasant, Mich. — P. J. Hoffmaster, State supervisor of wells, has ordered a special hearing June 9, for the discussion of proposed changes in rules and regulations governing the drilling, deepening, and plugging of natural gas wells.

Authority for the hearing and control by the conservation department, which Hoffmaster directs, was vested by an act of the 1937 legislature.

Previously, the State Utilities Commission had held several hearings concerning new regulations but a month ago all but dropped a tentative revisal program.

Catch Nebraska fish

Minot, N. D.—Standard Oil Company of California's Nels Kamp 1, deep wildcat on Section 3-154n-96w, Williams County, has resumed drilling below 7400 feet after successfully completing a fishing job which tied up operations for five days.

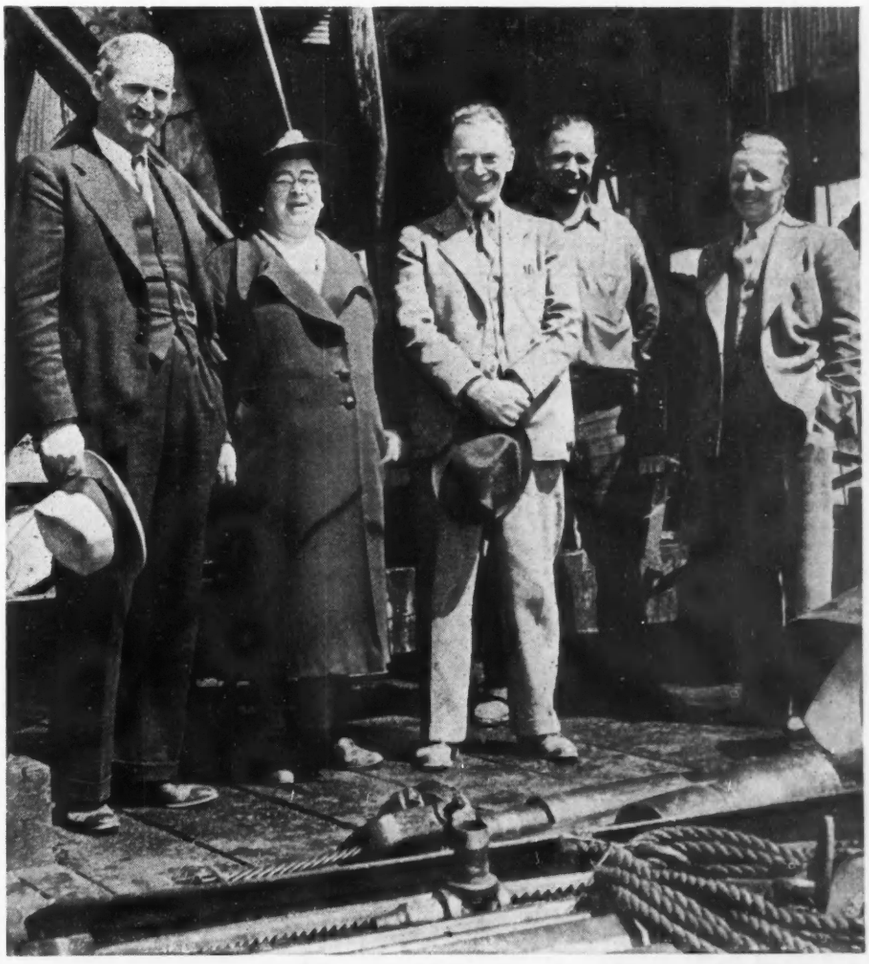
A seismograph crew has resumed its survey about six miles north of the test and will work north and west toward Temple and Ray. The crew's operations were halted late last year by unfavorable weather.

MICHIGAN Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
Ralph LaBlanc's Shaffer 1, ne nw se 2-2n-13w	*	1596
Columbia O&G Co., Siewald 2, sw ne sw 29-4n-12w	40	1680
Richter 1, ne nw se 30-4n-12w	110	1585
Muskegon Dev. Co., Fritza 1, ne nw nw 33-4n-12w	55	1653
Lee Brown, Spray 1, se sw se 3-3n-13w	*	1715
Appleton Tr., Schmidt 1, sw sw sw 5-3n-13w	*	1641
T. F. Caldwell, Bendel 1, sw se sw 27-3n-13w	*	1845
Arenac County—		
C. P. Hutton, Stratzewski 1, sw se sw 24-19n-3e	*	3003
McClanahan Oil Co., Buffalo Land 4, sw nw nw 10-20n-4e	95	2665
Clare County—		
American Prod. Co., Bremschan 1, ne ne ne 36-17n-4w	*	1360
Gladwin County —		
Ralph LaBlanc, Snellenberger 1, sw se sw 16-17n-2e	*	3660
Sun, Strohkirch 11, sw se se 4-18n-1w	50	3673
F. O. Whitelow's Campbell 1, ne nw se 27-18n-1w	128	3594
Chatham Oil Co., Knight 2, ne sw sw 16-18n-1e	*	3644
Isabella County—		
Pure, Wille 12, nw nw sw 4-14n-6w	108	3698
Mecosta County—		
Taggart Bros., Community 3, sw se 16-13n-10w	*	1400
Newaygo County—		
Muskegon Dev. Co., Carey 1, ne nw 35-14n-11w	*	3364
Gulf, Walker 1, ne ne nw 25-13n-13w	*	3375
Ogemaw County—		
M. J. Ingold, Stevenson 3, sw sw ne 24-22n-1e	65	2740
Weber Oil Co., Jensen 1, ne sw sw 35-22n-2e	40	2640

*Failures; †Junked; ¶Million cu. ft. gas.

Discoverers of Important Michigan Find



A new deep producing area in the Monroe limestone and the first commercial production in the "thumb" region of Michigan was the distinction gained when Norton & Kramer's Sharp 1 in Tuscola County began the first well in the state to produce from the Monroe where a substantial Dundee horizon bed has been found. Left to right are shown: Norman Carr, treasurer of Kramer-Norton organization; Mrs. Tillie Jaenicke, Michigan's only active woman operator and who handled negotiations to make a deep test after the Dundee zone proved non-commercial; Frank Norton, associate member; Carl Chaplin, driller; and Elmer Brehm, contractor and interest holder.

New Mexico

Eastern extension of Vacuum production seems probable.

Interval between Hardy and Eunice fields is shortened.

Hobbs, New Mexico.—Three outpost locations assigned the Vacuum field will be factors in determining the width of this large lime area. Outlook for a major east extension was enhanced the past week when Phillips Petroleum Company's State-Santa Fe 6, C SW SE 21-17s-35e, logged nominal saturation below 4368 feet, and was drilling lime at 4535 feet. Base of salt was tentatively called at 2780 feet, with an elevation of 3962 feet, indicating a low structural position when correlated with nearest production situated 2½ miles to the southwest.

The above company acounted for one of the outposts in making location for State-Santa Fe 7, C SE SW 27-17s-35e, ¼ mile southeast of its pending completion. The Texas Company will seek a west extension through the drilling of State 2-D, C SW NW 27-17s-34e, about 1 mile southwest of the westernmost producer. Standard Oil Company of Texas is making its initial entry in starting operations on State 1, C SW NW 32-17s-35e, offsetting production in the southeast extension. The area gained as inside location when Ohio Oil Company authorized the drilling of State-McCallister 1, C SE SW 25-17s-34e.

The Texas Company's State 1-P, 1⅔ miles southeast of Vacuum production, logged base of salt at 2810 feet, with an elevation of 3973 feet, and was drilling lime at 4358 feet. This company's State 3-O, an inside test, flowed 32 barrels natural per hour through ⅞-inch choke for completion at 4742 feet. Gas volume was rated at 925 feet per barrel. Repollo Oil Company's State 1-197, 4⅓ miles northwest of the Vacuum field, was drilling at 4850 feet, with no appreciable increase in the oil column. It is rated at 15 to 25 barrels daily from upper pay topped at 4644 feet. The Texas Company's Corbin 1, situated 8½ miles west by south of the Vacuum area, has plugged back from water at 5115-18 feet to 4450 feet for nitro shot. Small amount of free oil topped at 4310 feet was passed up in order to explore the full lime section.

Lea County recorded 8 new operations the past week, with half of the total allotted the Vacuum area. The Langlie sandy-lime field gained 2 when Culbertson & Irwin, Inc., rigged up to drill Henry 1, C N ½ NW SW 26-25s-37e, and Liberty 3, C N ½ NW SW 3-25s-37e. In the Penrose area, Penrose and Rowan-Nichols Oil Company's Christmas 1, SE SE SE 28-22s-37e, has moved in machine.

Interval between the Eunice field and the Hardy sandy-lime area was shortened when Continental Oil Company's State 2-F, Lot 8, Section 1-21s-36e, flowed 7½ barrels of oil hourly with 2¾ million feet of gas at 3807 feet. No oil accompanied the gas flow when acid was used at 3802 feet. The company's previous test in the southwest corner of this section missed the oil zone and made a small gasser after plugging off water at 3925-35 feet. Shell Petroleum Corporation has rigged to drill State-Endura 2-C, NE SE NE 24-21s-35e, near west flank of the Eunice field.

NEW MEXICO

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Lea County (Cooper)—		
Repollo, Whitten 4-B, ne ne se 4-24s-36e	360	3650
Lea County (Eunice)—		
Gulf, State-Bell 8-F, c nw nw 36-20s-36e	604	3860
Humble, Fopeano 5, c e½ sw se 26-20s-36e	20	3855
Lea County (Langlie)—		
Anderson-Prichard, Langlie 4, ne sw ne 8-25s-37e	600	3477
Culbertson & Irwin, Inc., Liberty Roy. Co. 2, c n½ sw nw 3-25s-37e	370	3467
Lea County (Monument)—		
Amerada, State 2-Q, c w½ ne se 16-20s-37e	1000	3842
Lea County (Vacuum)—		
Ohio, State-Warn 2, c ne sw 31-17s-35e	1440	4750
Texas Co., State 3-O, c sw ne 36-17s-34e	1200	4742

*Failures; †Junked; ¶Million cu. ft. gas.

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IMPORTANT WILDCAT TESTS

ALABAMA

Barbour—H. A. Stebbinger's Town of Lewis 1, sw se 11-9n-15e, lcn. **Choctaw**—Joe Modisett et al's McCorvey 1, se sw sw 20-9n-2w, sd 7520 ft. **Greene**—R. T. Jeffrey et al's R. C. Lett 1, 3-20n-2e, mim (120 ft e Willis & Payne's test). **Mobile**—J. C. Prine's King 2, 1120 ft s and 700 ft w nec 4-1n-4w, elev 134 ft, sd 1100 ft. Grand Bayou O&G Co.'s J. A. Stafford 1, sw sw 24-7s-3w, ru and sd.

ARKANSAS

Clay—Canadian American Oil Co.'s Smith 1, c ne nw 9-20-8, elev 375 ft, top Nacatosh 800 ft, sd 1005 ft shale. **Columbia**—J. A. Longino's Baker 1, se nw nw 13-17-20, mim. E. O. Olds' Mary Dennis 1, nw se sw 4-17-21, owdd, td 4513 ft. **Hempstead**—Easton, May & Murdock's R. M. LaGrone 1, ne ne 5-12-26, dr 3215 ft shale (Travis Peak). **Johnson**—Ark. La. Gas Co.'s Hudson 2, se nw 14-10-24, mim. **La Fayette**—Standard of La.'s McKean 2, nw sw 8-16-22, base anhydrite 3406 ft, base James lime 3968 ft, dr 5056 ft shale and sand (formerly carried as in Columbia County). **Lonoke**—J. W. Eddington et al's Anderson 1, nw ne 7-4-9, 12-in csg 85 ft, dr 576 ft. Cabot Drlg. Co.'s Benson 1 (Cabot townsite lcn), trying kill water flow, td 1463 ft. **Union**—Joe Modisett et al's Frost Lbr. Co. 1, ne ne 8-18-12, rur.

FLORIDA

Levy—Fla. Oil Discovery Co.'s Sholtz 2, sw sw ne 9-15s-13e, arr core 2946 ft shale and limestone (no recent report). **Nassau**—St. Mary's River Oil Corp.'s Hilliard Turpentine Co. 1, nw nw se 19-4n-24e, elev 110 ft, 6⅝ in csg 3935 ft, coring 4306 ft. **Polk**—Edw. A. Hill's Polk County Lbr. Co. 1, nw nw ne 32-25s-25e, dk. **Suwanee**—Wm. G. Blanchard's Lucy Cotton 1, se ne 35-3s-11e, elev 70 ft, sd for heavier rig, 200 ft. J. W. Phillips Oil Explorations' Shilkett 1, nw nw 14-4s-14e, dk.

CALIFORNIA

Los Angeles County: Bellflower—Geo. L. Clayton's Scott 1, 32-3-12, co 6897 ft. **Castaic**—Royal Land Corp.'s No. 1, 8-4n-17w, dr 705 ft. Shell's Dougherty 1, 9-4n-17w, dr 1228 ft. **Lomita**—D & B Oil Co.'s No. 1, 30-4-13, fsg drill collar and bit. To test below 5120 ft, td 5275 ft. **Newhall**—Palmluck's No. 1, 23-3-16, rur. **Redondo**—Clifton Oil's No. 1, 17-4-14, preparing to test upper showings, td 5500 ft. **San Fernando**—Tide Water's Porter 1, 27-3-16, grading roads. **Whittier**—Geo. W. Langstaff et al's Iliff 1, 8-2-11, rig.

Orange County: Anaheim—Shell's Weisel 1, 16-4-10, dr 4538 ft. **Costa Mesa**—A. V. Oil & Gas' No. 1, 16-6-10, dr 131 ft. **Kraemer**—Congress Oil's Kraemer 1, 36-3-9, co to run csg and test 3014 ft.

San Bernardino County: Chino—Carbon Canyon Oil's Schuch 1, 31-2-8, foundation. Southern Counties Pet.'s Los Serranos 1, 22-2-8, rig. **Fresno County: Clovis**—Central Valley Oil's No. 1, 1-12-20, co 515 ft. **Coalinga**—Magnet Oil's Fearon 2, 18-20-15, rur. Universal Cons.'s Leavitt-Hintze 1, 12-20-15, lcn. J. F. Wilcox's No. 6, 11-20-14, bailing 566 ft. **East Coalinga**—Pure's S. P. L. Co. 1, 31-18-17, washing over drill pipe, td 10,861 ft. **Jacalitos Hills**—Dauphin Development's Boone 1, 30-21-14, redr 2324 ft, td 3780 ft; Boone 2, 30-21-14, foundation.

Kern County: Arvin—General Petroleum's Pauley 1, 22-31-29, abd 500 ft. Petrex's Petrex 1, 32-31-30, dr 4018 ft. Union's Berry 1, 15-31-29, bailing, so 6812 ft. **Belridge**—F. E. Abbott's No. 1, 18-27-19, rig. General's St. Helens 1, 12-28-20, rigging pump. **Buena Vista Lake**—Ohio's KCL A-8, 32-31-26, coring 10,572 ft. **Devil's Den**—Amerada's Beer 5, 22-26-19, redr 7459 ft, td 8298 ft. Gibson's Alferitz 3, 14-25-18, dr 512 ft. Geo. Goodrum's Baron 1, 24-25-18, so 1210 ft. **Dominion**—Geo. W. Dean's Dean 1, 26-26-28, rur. Master Pet.'s Recovery 3, 33-26-28, wocs 1600 ft. **Edison**—Ray W. Stevens' No. 1, 22-30-30, rur. Geo. W. Johnston's Brown-Paulette 1, 33-29-30, dr 1025 ft. **Fruitvale**—The Texas Co.'s Camp-West-Lowe 1, 7-29-27, rur. **Grapevine-Wheeler Ridge**—Ohio's Tejon D-3, 28-11-18, dr gray sand 1846 ft. Petrol Corp.'s Reserve-Petrol 33-5, 33-11-19, dr 676 ft. Richfield's KCL 1, 28-11-20, dr 2893 ft. Universal's No. 1, 33-11-19, pumping 75 bd, 20.5 gravity 20.0 percent 4988 ft. **Lamont**—Rollo Brinkman's Sexton 1, 11-31-28, grade. **Lerdo**—Standard's KCL 18-1, 29-28-26, dr 8110 ft. **McFarland**—Tide Water's Pond 1, 17-26-25, rur. Shell's KCL 83-35, 35-26-25, dr 5949 ft. **McVan**—Desert Glow's No. 3, 14-27-27, rig. **Mt. Poso-East**—W. P. W. Pet.'s Packard 3, 14-27-28, abd in gray sand and silt 1357 ft. W. P. W. Pet.'s Packard 4, 14-27-28, rur. **Poso Creek**—Harkness & Laws' Hunt 1, 28-27-27, foundation. **San Emigdio**—Shell's KCL 1-A4, 26-11-22, dr 9649 ft.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*
‡—*salt water (completions).*
†—*junked and abandoned.*
¶—*million feet of gas.*
abd—*abandoned.*
bbls—*barrels.*
br—*building rig.*
bs—*basic sediment.*
csg—*casing.*
co—*cleaning out.*
dd—*drilling deeper.*
dk—*derrick.*
dr—*drilling.*
fsg—*fishing.*
ft—*feet.*
hfw—*hole full of water.*
in—*inches.*
lcn—*location.*
m—*milling.*
mim—*moving in materials.*
mit—*moving in tools.*
mot—*milling on tools.*
n, s, e, w—*north, south, east, west.*
oih—*oil in hole.*
owdd—*old well drilling deeper.*
owpb—*old well plugging back.*
pb—*plugged back or plugging back.*
r—*reaming.*
rog—*rig on the ground.*
rur—*rigging up rotary tools.*
rust—*rigging up standard tools.*
sd—*shut down.*
sdtr—*sidetracking.*
sg—*show gas.*
si—*shut in.*
so—*show oil.*
so&g—*show oil and gas.*
spd—*spudding.*
sr—*straight reaming.*
sw—*salt water.*
td—*total depth.*
ur—*underreaming.*
wih—*water in the hole.*
wo—*workover.*
wocs—*waiting on cement to set.*
wosr—*waiting on standard rig.*

Strand—Continental's KCL E-1, 17-30-26, running water witch 8242 ft. **Temblor Hills**—Chico Martinez' Holly 1, 1-29-20, dr 1108 ft. **Wasco-Semitropic**—Continental's KCL A-3-8, 8-27-24, rur. Seaboard-Assoc.-KCL C-1, 26-27-24, co 6300 ft, td 10,244 ft. Standard's Mushrush 1, 7-27-24, foundation; KCL 8-B-1, 17-27-24, rur.

Kings County: Dudley Ridge — Vulcan's Josephine 2, 24-23-20, rur to deepen 5399 ft. **Tulare County: Ducor**—Corbridge & Gould Baringer's Sears 2, 29-24-28, abd granite 863 ft. Nelson & Davison's Muller 1, 1-24-27, dr 310 ft. **Trico**—Caminol Co.'s A. O. G. 3, 29-24-24, rur to deepen 7555 ft.

Santa Barbara County: Carreaga—Douglas-Stratton's No. 1, 8-8-33, dr 4595 ft. **Casmalia Cat Canyon**—Standard's Los Flores L&O 1, 27-9-33, redrilling 5370 ft. Southern California Drilling's Houk 1, 9-9-33, bailing 5002 ft. **Coal Oil Point**—South Crude's Permit 191-2, 24-4-29, redrilling 2175 ft. **Gaviota**—Gaviota's Hollister 1, 35-5-33, preparing to run liner and perforation 3205 ft. Willshire's Hollister 1, 35-5-33, dr 4050 ft. **Gato Ridge**—Barnsdall's Tognazzini 3, 9-8-32, ru. O. C. Field's Continental 3, 9-8-32, rig. **Lompoc**—J. E. O'Donnell's Helen 1, 8-7-33, dr shale 2265 ft. **Los Olivos**—Continental's La Laguna 1, 24-8-31, ru. United Western's Bradley 1, 15-7-30, dr 3228 ft. **Orcutt**—Bankline's Silva 1, 7-9-33, dr 4947 ft. Warren Deuel's Garrett 1, 12-9-34, rig.

San Luis Obispo County: Elkhorn—Western Plains' Bell 1, 7-31-21, redrilling 2500 ft. **Edna**—Loma Grande's Luis 1, 28-31-13, rig. **Huasna**—Hancock's Scherer-Dickes 1, 30-12-33, preparing to resume 3361 ft.

Ventura County: Moorpark—Darby's A. B. Cohn 1, 7-2-19, loc. **Oxnard**—Walter G. Rowe's L. Johnson 1, 15-1-22, fsg 4480 ft. **Ojai**—High Mesa's Butcher 1, 16-4-22, dr 1510 ft. Holly Development's Macrate 1, 27-4-23, grading roads. St. Louis' Pirie 1, 18-4-22, co 2710 ft. **Sespe**—Continental's Elkins 1, 23-4-19, bailing muddy water 4159 ft. Claran's Hardison 1, 22-4-20, dr sand and shale 380 ft. La Salle & Van Dissen's No. 1, 17-5-19, grade. Merchants Petroleum's Cochrane 8, 1-4-20, dr 575 ft. **South Mountain**—Clipper's Schieferle 1, 17-3-20, rig. Texas Co.'s Richardson 5, 13-3-21, dr 5135 ft. **Tar Creek**—Section 20 Oil's No. 1, 20-5-19, co 1611 ft. **Timber Canyon**—J. W. Martin's Arnett 1, 15-4-21, dr 1441 ft.

OKLAHOMA

Atoka—Shelton et al's Lee 1, ne nw sw, 2-4s-10e, sd 3110 ft. **Carter**—Texas' Cathay 1-B, se ne ne, pb shot 5335-70, shot 4915-30, may acidize. **Cimmaron**—Barnsdall's School Land 1, c nw se, 35-5n-5ecm, dr 4440. **Choctaw**—Ross et al's Hardy 1, se se nw, 21-7s-15e, dr 800 ft. **Coal**—Carter et al's Mote 1, c e½ sw nw, rur. **Cotton**—Turner et al's Collins 3, se se ne, 18-4s-10w, rur. **Creek**—Jackson's Berryhill 1, 1-18n-10e, dr 1580 ft. **Hughes**—Phillips' Becker 1, ne nw sw, td 6283 ft, pb 5680 ft, flowed 202 bbls, cp 625 lbs. **Jefferson**—Massard et al's Barrett 1, ne se se, 14-6s-6w, sd td 1890 ft. Stebbins et al's Bourland 1, sw sw se, 24-7s-4w, dr 4170 ft. **Kay**—Clark's Willin 1, se se sw, 24-27n-4e, dr 2560 ft. Helmerich & Payne's school land 1, sw se sw, 16-28n-1w, dr 2460 ft. **Kiowa** — Anderson Prichard's Johnson 1, 10-7n-20w, fsh 1210 ft. Aauntt et al, Parks 1, nw nw se, 29-7n-20w, dr 820 ft. Anderson Prichard's Cribbs 1, se se ne, 28-7n-19w, dr 1230 ft. **Lincoln**—Ramsey et al's Parks 1, sec, 22-12n-6e, td 4538 ft, to dd. **Love**—Sinclair Prairie's Peabody 1, nec, 35-6s-2w, circ, td 5961 ft. **Marshall**—Hughes Drilling's Vittittoe 1, c ne se, 11-5s-4e, dr 7002 ft. **Murray**—Gilbreath et al's Wolf 1, c se sw, 7-1n-2e, shut in 35,000,000 cu ft gas, 2245-62 ft. First National Oil Co.'s Butterly 1, ne ne se, 22-1n-1e, sd for rotary, td 100 ft. **Pawnee**—Ross et al's Morhain 1, ne ne nw, 30-22n-7e, rig. Owens et al's Riddle 1, c e½ e½ nw, ur 8-in, td 2400 ft. **Payne**—Sinclair Prairie's McQuain 1, ne nw ne, 22-19n-1e, lcn. **Pittsburg**—Supreme's Hickey 1, nw sw nw, 4-2n-15e, sd 643 ft. **Pontotoc**—Lee's Weatherley 1, nw se nw, 24-1n-7e, sd 700 ft. Union Dev. Co.'s Abbott 1-A, sw nw ne, 34-3n-6e, dr 150 ft. Anderson Prichard's Mayer 1, se se sw, 19-3n-8e, spd. Henry's Parker 1, sw sw se, 17-4n-6e, dr 600 ft. **Pottawatomie**—James' Henderson 1, nw nw ne, 4-5n-3e, rig. Farmers Mutual. Waite 1, ne ne nw, 9-5n-5e, dr 3250 ft. **Seminole**—Boettcheer Oil's Morgan 1, se ne nw, 8-5n-7e, fsg 450 ft. Pure Oil's Lack 1, se sw nw, 3-6n-5e, td 3965 ft, rust. Denver P&R's Mathis 1, sw nw sw 7-6n-6e, sd 2665 ft. Pine's Wright 1-A, se se ne, 16-6n-6e, shot 3526-66 ft, swb 22 bbls, pipe collapsed. Smith et al's Coker 1, nw ne ne, 25-7n-5e, swb 25 bbls after shot 3001-11 ft, to pump. Wood Oil's Cully 1, sw sw nw, 34-7n-5e, dr 3675 ft. Villines et al's Reed 1, nec, 35-7n-5e, shot 2991-99 ft, swbd 90 bbls while running tubing. **Washita**—McShirter's fee 1, nw sw sw, 34-8n-19w, fsg 2147 ft.

OIL BOOKS

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ILLINOIS

Bond—Huppard et al Dresser 1, sw ne nw 21-6n-4w, dr 600 ft. Universal's Molden 1, nw ne sw 24-6n-4w, rust, td 2045 ft. Whitehead et al's Pollan 1, nw se sw, 26-6n-4w, sd 3300 ft. **Clark**—Watkins et al, Wise 1, nw nw se, 24-1n-3w, rust. Stipes' Wilhoit 1, se ne nw, 30-12n-13w (no report). **Clay**—Kennedy et al's Eisenmeier 1, ne ne se, 3-2n-5w, sd 1300 ft. Kingwood's Graham 1, c s½ sw ne, 13-3n-6e, showing from 2911 ft, td 2984 ft, sd. Eureka Oil's Siebens 1, nw sw ne, 35-3n-8e, rur. Carter's Cox 1, c se se sw, 14-4n-5e, cor 4269 ft. Ohio's Negley 1, c w½ nw sw, 24-4n-8e, sd 2595 ft. **Clinton**—Heldt's Lampin 1, sw se nw, 16-1n-2w, dr 1140 ft. Ray's Schnitzmeyer, ne ne se, 6-1n-1w, dr 1300 ft. Self's Dodillet 1, ne se sw sw, 24-1n-1w, sd 1415 ft. Phelp's Dodillet 1, se nw sw, 25-1n-1w, fsg 723 ft. Brookside's Nothaus 1, ne ne ne, 23-2n-2w, spd and sd. Wilson et al's Goesling, c w½ nw se, 35-2n-2w, sd 770 ft. **Crawford**—Hastings' Athey 1, c ne ne ne 17-8n-12w, dr 1500 ft. **Christian**—Independent's Warren 1, swc 23-11n-2e, dr 600 ft. **Dewar**—Leach Bros.' Lee 1, sw ne se 11-1s-10e, dr after cemt csg, td 3229 ft. **Effingham**—Kingwood's McWhorter 1, s½ se nw, porosity 4022-36 ft, dr. **Fayette**—Jarvis' Sinclair 1, c se nw ne, 29-8n-3e, comp. 240 bbls, Benoist sand, 1443-58 ft. J. E. Steinmish's Tish 1, c ne nw nw se, 33-6n-3e, dr 1400 ft. Whisenant et al's Zanders 1, c sw se nw, 36-9n-3e, td 1565 ft to pb. **Jasper**—Obermeyer's Atkins 1, nw nw ne, 3-6n-9e, sd 2708 ft. **Marion**—Somer's Lancaster 1, se nw nw, 16-1n-13, test, td 1668 ft. Texas's Tate, c w-s½ nw nw, mit. Dalton's Dalton 1, nw se ne, 19-1n-3e, sd 800 ft. Dalton's Clifton 1, ne sw sw, 16-1n-4e, dr 2100 ft. Oil Royalties' Suggs 1, c sw nw nw, 11-2n-1e, spd. Siegel's Roddy 1, se se sw, 20-2n-3e, ur 5-in, td 2207 ft. C. A. Adams' Hawkins 1, c sw ne, 7-3n-1e, rur. Marion Oil's Wilson 1, ne ne se, 18-3n-3s, 6-inch set 1669 ft, dr. Farrely's Kyle 1, sw nw nw, 28-4n-4w, lcn. **Monroe**—Sloan et al's Puntney 1, sw sw nw, 23-2s-9e, mit. **Montgomery**—Hammer's Jones 1, c nw, 22-7n-3w, dr 200 ft. **Perry**—American Pet.'s Coal 1, se ne ne, 22-6s-2w, lcn. **Randolph**—Hunt et al's Smith 1, nw se sw 11-5s-8e, rur, td 100 ft. Mazda Oil's Meade 1, ne ne ne, 26-5s-9e, rust, td 3203 ft. **Richland**—Wicklund's Brace 1, se ne nw, 32-2n-9e, lcn. Shamrock's Alvord 1, 33-3n-9e, mit. Saline—Bolton's Beagle 1, nw nw ne, 13-9s-7e, pb, td 2430 ft. Rogers' Saylor 1, sec 3-10s-6e, sd 1502 ft. Whitlock's Anthis 1, nw nw ne, 12-11s-5e, sd 1745 ft. **St. Clair**—Hanks' Collins 1, c ne ne se, 24-1s-9e, lcn. **Shelby**—Borah's Patten 1, c ne ne nw, 25-11n-2e, dr 600 ft. Milan's Kull 1, sec 4-11n-3e, lcn. **Wayne**—Bruner's Kuyoth 1, (owdd), nwc 30-2n-6e, co to 3017 to run csg. Wicklund's McCauley 1-B, cored 2950-59, sd high water. **Washington**—Salvage's Reinkensmeyer 1, se se nw, 11-1s-2w, spd. Frost et al's Begeluin 1, sw sw nw, 12-1s-1w, lcn abd. Parshall et al's Harmon 1, se sw sw, 22-1s-1w, dr 755 ft. Gulf's Wilson 1, c e ne ne, 3-1s-5e, dr 1420 ft. Kingwood's Webb 1, c e sw ne, 4-2s-2e, lcn. Nollem et al's Kelley 1, ne nw ne, 25-4s-2e, td 2866 ft, to test after acid. Eee et al's Hamilton 1, sw sw nw, 20-4s-3e, sd 2508 ft. **Williamson**—Oil Syndicate's Scott 1, sw se sw, 4-10s-2e, dr 600 ft. Fortune et al's Bonar 1, c s- sw ne, 30-11s-3e, dk.

NORTH LOUISIANA

Bienville—DeSoto O&G Co.'s Wm. Ashley 3, c nw se 15-16n-10w, rog. Mrs. B. A. Fleming 1, nw nw 18-16n-9w, mim. Gulf's Goodpine 1, se sw 25-14n-8w, elev 157 ft, massive anhydrite 5303-5420 ft, top lower Marine 9650 ft, dr 10,130 ft, gray sandy lime and shale. Producers O&G Co.'s Lockett 1, ne ne 9-15n-10w, 7-in csg 2940 ft, dr 4125 ft. **Bossier**—Lloyd & Sloan's B. A. Sherrill 1, se se 12-19n-12w, arr acidize 785 ft. **Caddo**—R. E. Allison et al's Ellerbe et al 1, sw nw 27-18n-14w, spd 13⅜ in csg 229 ft (6000 ft test). Oils, Inc.'s A. Cazaux 1, sw sw 16-16n-13w, rur (3500 ft test). **Caldwell**—Oakes et al's Kyles 1, sw ne 18-11n-3e, install heavier rig, td 470 ft. **Catahoula**—G. E. Foster et al's W. S. Peck 1, c s½ 39-10n-8e, coring 480 ft. **Claiborne**—E. T. Oakes et al's Kilgore 1, ne se 28-21n-5w, elev 288 ft, 5¾ in csg 5290 ft, logged saturated lime 5297-5305 ft and 5307-12 ft, 7 thribbles tubing twisted off while testing, td 5313 ft. Union Prod. Co. et al's Brownfield 2, c se nw 5-19n-5w, elev 235 ft, 7-in csg 10,559 ft, ur 10,661 ft. Weaver Oil Corp.'s Edmonds 2, sw ne 16-20n-5w, elev 209 ft, base massive anhydrite 4370 ft, top Travis Peak 5600 ft, logged so 5475-83 ft, coring 5763 ft, red shale. J. N. Buchanan et al's Miller Est. 1, ne sw 11-20n-8w, mir. **De Soto**—S. S. Alexander's Stell 1, ne ne 5-12n-16w, elev 245.6 ft, perf csg 5150-5440 ft, flowed est 50 to 60 bbls oil day, hung swab, trying to unlodge, old td 6002 ft. The Hunter Co.'s Parker 1, se sw 26-12n-16w, elev 243 ft, logged saturated lime 5025-83 ft, cemtd 5-3/16 in csg on bottom at 5184 ft, arr perf and test 4950-5030 ft. S. P. Taylor's Barnhart 1, ne se 20-14n-12w, mim. M. L. Stephens' M. E. Garrett 1, nw ne 10-11n-16w, mim. La. Seaboard's Lawrence 1, sw ne 36-12n-14w, elev 332 ft, tested so 2062 ft, tested dry 2822 ft, arr deepen. G. H. Collins et al's Joyner 1, sw ne 28-11n-12w, spd woc surf csg. **Franklin**—Southern Star Pet. Co.'s Grayson 3, sw ne 36-12n-6e, sd 1900 ft. **Grant**—C. L. Thompson et al's Woodward 1, ne sw 10-6n-3w, top Wilcox 2867 ft, dr 3395 ft. C. R. Bowers et al's Harrison 1, ne sw 21-8n-5w, rur. **Madison**—Continental Oil Co.'s Singer Mfg. Co. 1, n½ ne nw 3-15n-11e, rur. **Morehouse**—Hunter & Rowe's E. M. Clarke 1, sw ne 10-20n-7e, elev 103 ft, top lime 6218 ft, arr deepen, td 7022 ft. **Natchitoches**—Jos. E. Popkins' Peavy-Wilson 1, nw nw 36-7n-9w, ru and sd. W. T. Ryan et al's Lambert 1, nw nw 4-8n-9w, dr 3951 ft chalk. Raines Bros.' Allen Plantation 1, ne sw 22-10n-9w, fsg 1250 ft. **Red River**—Glassell & Whitehurst's LeLong 1, ne nw ne 25-12n-11w, sd 3113 ft. R. M. Hutchins et al's Sample 1, se nw nw 11-14n-11w, 7-in csg 1225 ft, dr 1765 ft. **Sabine**—W. L. McClanahan et al's Frost-Johnson 1, se ne sw 22-9n-13w, 16-in csg 52 ft, dr 1425 ft. H. M. Sneed et al's Leone 1, nw se 8-7n-13w, lcn. J. G. Sutton-Zwolle Oil Co.'s Bowman-Hicks 1, w½ sw se 14-7n-14w, lcn. Bowman-Hicks 2, w½ sw nw 24-7n-13w, lcn. Albert Reich et al's Glaque 1, ne se ne 27-7n-14w, rur. F. W. Martin & Co.'s Sabine 1, c w½ ne ne 23-7n-14w, 9⅝ in csg 2150 ft, dr 2290 ft. Sabine 2, c e½ ne ne 23-7n-14w, lcn. Lee Whitehurst et al's Bowman-Hicks 1, se se 14-7n-14w, rur. A. Boykin King's Sabine 1, c nw nw 19-7n-13w, mim. Sabine 1-A, c w½ nw nw 19-7n-13w, lcn. Sabine 2, c sw nw 19-7n-13w, lcn. **Tensas**—H. B. Schumacher's Mounds Land Co. 4, irreg. section 39-11n-12e, top Cockfield 1025 ft, tested sw 1025-48 ft, sd 1765 ft. **Union**—Joe Modisett et al's Frost Lbr. Co. 1, ne sw 14-21n-1e, elev 188 ft, top lower Marine 6161 ft, top pink anhydrite 9060 ft, top Permian lime 9612 ft, trying unlodge hung drill stem, td 9637 ft. Standard of La.'s Frost Lbr. Co. 1, c sw sw 13-23n-2w, lcn. **Webster**—Magnolia's Frank Sexton 1, c sw ne 32-23n-9w, elev 225 ft, top first anhydrite stringer 4175 ft, top massive anhydrite 4348 ft, top Travis Peak 5701 ft, 9⅝ in csg 6838 ft, top lower Marine 7605 ft, top Bodcaw (no show) 8032 ft, ran electrical tester, 7-in csg set at 9464 ft, running geophone preparatory to perf and testing at 8892 ft where 19 percent porosity logged, td 10,462 ft. W. M. Chambers' Thomas 1, se se 11-22n-11w, dk.

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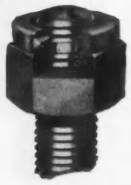

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MISSISSIPPI

Calhoun—L. C. Lucas' B. C. Boland 1, sw sw 9-22n-9e (corrected lcn), dk. S. & O. Properties, Inc.'s G. C. Cooner 1, se ne 12-24n-8e, sd 3005 ft. **George**—Cleve Love et al's J. J. Newman Lbr. Co. 2, c sw 9-1s-8w, elev 111 ft, 10-in csg 1374 ft, top Het 1382 ft, arr dd. **Hinds**—Cleve Love et al's Montgomery 1, sw se se 28-6n-4w, lcn. S. F. Johnson 1, ne se 29-6n-1w, elev 343 ft, top black shale 3040 ft, top chalk 3097 ft, top Eutaw 3617 ft, top red beds 3657 ft, 7-in csg 3355 ft, sd 3707 ft. Progressive Realty Co. 1, se sw 35-6n-4w, top Wilcox 2750 ft, dr shale (Wilcox) 4650 ft. **Lamar**—Southern Miss. Pet. Corp.'s Morris 1, nw se 4-2n-14w, elev 332 ft, top Het 1138 ft, 10-in csg 1144 ft, top Vicksburg 1615 ft, top Minden lime 2132 ft, top Wilcox 2735-53 ft, ran electrical tester, td 3029 ft Wilcox. **Montgomery**—Dr. T. A. Chichester et al's E. C. Mitchell 1, se nw sw 30-20n-7e, dk. **Pontotoc**—Waldrop, Melvin & Waldrop's Bray 1, sec n½ sw 17-11s-1e, woc surf csg. **Simpson**—Goodwill O&G Co.'s Berry 1, se sw 33-2n-4e, elev 307 ft, co, td 2502 ft. Cleve Love et al's N. E. Garner 1, sw ne 1-10n-17w, dk and mlr. **Yalabousha**—Acme Holding Co.'s Boyle 1, nw nw 33-25n-7e, sd 1222 ft shale and gumbo.

EAST TEXAS BORDER COUNTIES

Marion—Tom Bell's Moseley 1, D. Lane sur, ran electric test, arr set csg, td 2524 ft. State Line O&G Co.'s N. W. Burke 1, Ganes Coore sur, aban 2449 ft, arr skid 500 ft for second test. **Panola**—Texas Co.'s Claude Adams 1, Thos. Cox sur, 13⅜ in csg 579 ft, 9⅝ in csg 5940 ft, dr 7752 ft. Walters et al's Phomplin 1, W. Moore sur, woc 12½ in csg 68 ft. Petroleum Heat & Power Co.'s Frost Lbr. Co. 1, Jno. H. Gibson sur, lcn. J. W. Bird 1, Geo. Gallsty sur, lcn. **Sabine**—Petroleum H&P Co.'s Jasper State Bank 1, R. McDonald sur, woc surf csg 110 ft. **Shelby**—C. L. Cope's Pickering 1, English sur, rur. Vaughn Prod. Co.'s Pickering 1, Brooks sur, mim. Shelby Oil Co.'s Windham 1, A. K. English sur, cored saturation 3397-3422 ft, treated with 1500 gallons acid, swabbing, td 3422 ft. J. C. Windham 1, nwc Shelbyville townsite, lcn. Mallard & Locke's (formerly DeArman & Mallard), W. E. Roller 1, J. Sullins sur, dr 3270 ft. Redditt & Gray's Pickering 2, 237.8 ac tract, P. J. Loggins sur, rur.

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906-7 SECOND NAT'L BK. BLDG.—HOUSTON
1807-11 TOWER PETROLEUM BLDG.—DALLAS

County Ownership & Oilfield Maps

ZINCERT FORT WORTH ZINCERT

OIL MAP COMPANY

Letters to the Editor

Depression

"Shall We Make Depressions Permanent?" is one of the finest and most timely editorials I have ever read. It is unfortunate if this fine piece of writing will be limited to the eyes of the subscribers of THE OIL WEEKLY. I am sure if this editorial was published in pamphlet form there would be a demand for it for distribution.

Certainly a large part of our citizens are against the governmental policy which is leading to bankruptcy but until enough of us become articulate; until enough of us are willing to do something about it Congress will interpret our silence as consent. Your editorial, widely circulated, would do immeasurable good.

C. D. WILSON.
Vernon Oil & Gas Company
204 Fourth National Bank Building
Wichita, Kansas.

Thanks, Mr. Wilson, we are having several thousand reprints of this editorial printed and they may be had for the asking as long as they last.—Editor.

The new arrangement

I want to commend you upon the present arrangement of the reading matter in THE OIL WEEKLY, as shown by the issue of May 9th. I am delighted to see the new arrangement.

The Weekly has been my chief oil publication since the beginning, almost never have I missed an issue. It is a *great* publication.

EDWARD A. HILL,
Tampa, Florida. *Consulting Geologist.*

I read with keen interest each of your Editorial Comments as they appear in THE OIL WEEKLY. The clear and logical expression and the timeliness of your comments must appeal to every good American who has at heart the best interests of our country and its industrial foundation.

It is regrettable that the great mass of voters does not have an opportunity to read your comments and those of a similar trend. A great section of our people do not yet know the significance of the elements that contribute to and maintain the present unfortunate status of business. There should be some way to reach these people, present to them the facts and, by constant repetition, create a new community of thought and interest. This then would be reflected by a new baptism of patriotism on the part of our leaders in Washington. Self-interests and sectionalism would pass away, and we would no longer be ruled by political expediency. Confidence would then be restored, and the way would again be clear for general constructive forward movement along all lines.

Unemployment would be rapidly reduced and capital would again flow freely along the accustomed channels.

Meantime, my kindest regards and "more power to you."

Sincerely, yours,
VINCENT G. SHINKLE,
Vice President.

Moody Engineering Co., Inc.
140 Cedar Street,
New York City.

COMPREHENSIVE INDEX

of the

PUBLICATIONS OF THE AMERICAN ASSOCIATION of PETROLEUM GEOLOGISTS 1917-1936

By

DAISY WINIFRED HEATH

A.A.P.G. PUBLICATIONS INDEXED

(20 Years of Geology of Oil and Gas)

The Bulletin, Volume I to Volume XX	1917-1936
Geology of Salt Dome Oil Fields (out of print)	1926
Theory of Continental Drift (out of print)	1928
Structure of Typical American Oil Fields, Volume I (out of print)	1929
Structure of Typical American Oil Fields, Volume II	1929
Stratigraphy of Plains of Southern Alberta	1931
Geology of California (out of print)	1033
Problems of Petroleum Geology	1934
Geology of Natural Gas	1935
Geology of the Tampico Region, Mexico	1936
Gulf Coast Oil Fields	1936
Structural Evolution of Southern California	1936

382 pp., free to members. Non-members, individuals, companies, and institutions may buy copies at $3.00, postpaid.

THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

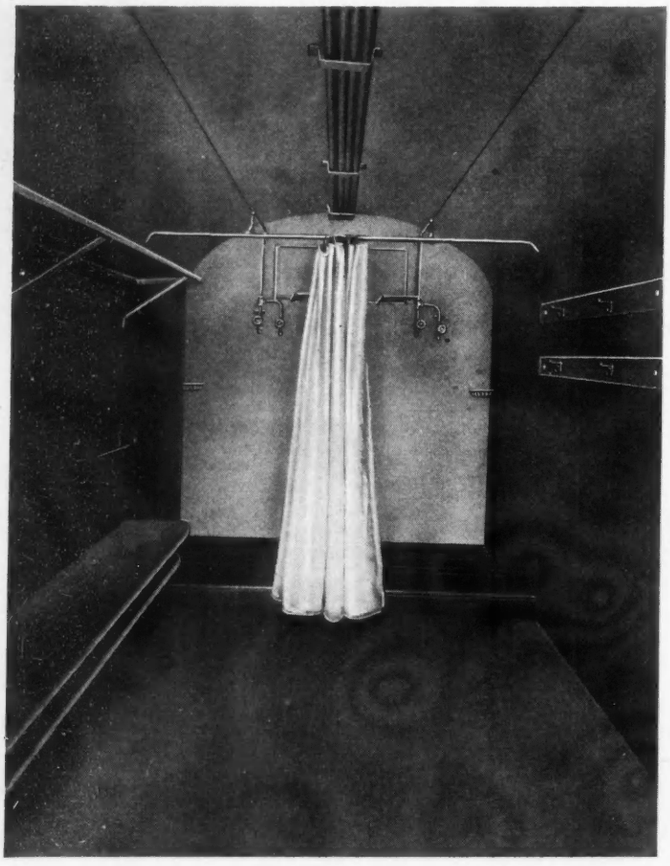
Box 979

Tulsa, Oklahoma, U.S.A.

NEW PRODUCTS FOR THE FIELD
Machinery • Tools • Equipment

OIL FIELD BATH HOUSE
Wyatt Metal & Boiler Works

Wyatt Metal & Boiler Works, Houston, Texas, have recently placed on the market a bath house which offers a better standard of living for field workers.



Wyatt Bath House

With the exception of interior finishing and fixtures, it is of the same design and construction as the company's steel tool house. It is easily portable by truck, being complete with welded-on hooks to facilitate loading and unloading, while I-beam skids serve as a foundation and also aid in moving on location. The house is of welded steel construction, 7 feet wide, 10 feet long and 7½ feet high, and weighs 2250 pounds.

The house is piped for hot and cold water, wired for electricity, and piped for steam heat. It comes equipped with shower curtain, safety wooden floor slatting, bench, shelves, and clothes hooks. A threaded drain outlet provides for piping waste water to a distant point, if desired. Two adjustable ventilator ports in the shower end of the house allow for temperature regulation, aided by a ventilator over the door.

THREAD COMPOUND
Rector Well Equipment Company

Rector Well Equipment Company, Fort Worth, Texas, announces the manufacture and marketing of Rectorseal, an improved thread dope which has been especially developed for use on threaded connections in the oil industry.

This new thread protective compound does not have a petroleum base, and is described as being insoluble in all petroleum products. It is recommended for use wherever there are threads; on gas, gasoline, oil, water and mud lines; on steam lines up to 400°F., and on tool joints. A 1-gallon container of Rectorseal is recommended as sufficient for treating the threads on 2000 feet of 7-inch casing.

This product is not offered as competitive to thread compounds developed by oil companies to prevent rust

on threads while pipe is racked, but to do those thread jobs which the average thread dope will not properly serve.

Rectorseal comes in two sizes of containers; for sale in 1-gallon cans, and shipped in ½-pint cans with all Rector casing heads.

Tests have been made following the application and setting up of Rectorseal on pipe having the threads cut entirely through, with the treated threads showing no leak under 4000 pounds pressure.

ELECTRIC METAL ETCHER
Ideal Commutator Dresser Company

Ideal Commutator Dresser Company, 1525 Park Avenue, Sycamore, Illinois, has placed on the market an electric etcher for permanently marking on metal surfaces.

Used in the same manner as an ordinary lead pencil, the etcher writes, prints or marks on tools, gauges, dies and hard metal parts. The etcher operates rapidly, economically and accurately. Two points are provided with the unit, one copper that may be sharpened for fine marking, the other a special alloy for ordinary marking. The depth of the mark is controlled by the speed at which the point is moved over the metal, and also changing the Hi-Lo switch on the transformer.

The complete unit consists of a fibre handle with two points, a 4 x 7-inch work plate and 5 feet of No. 6 flexible wire with a carbon-rod resistor and connector halves for attaching to a No. 5A7 deluxe transformer.

ACMELOY METAL
Acme Foundry and Machine Company

Acmeloy metal, a fine Pearlitic or Sorbo-Pearlitic iron manufactured under license arrangement with the Sorbo-Mat Process Engineers, has been announced by Acme Foundry and Machine Company, which is making daily pourings at both its Coffeyville, Kansas, and Blackwell, Oklahoma, foundries. It is a product resulting from careful selection of Cupola mixes, precise technique in charging, melting and treating of molten metal. It is not an alloy cast iron, but an alloy treated iron.

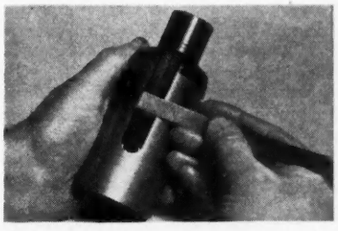
It is being used for rig sprockets, plungers for well pumps, steam pistons for hot oil pumps, Diesel-engine pistons and cylinder heads, sprocket hubs for rig fronts, and oil-well cranks. The manufacturers claim it has characteristics for the following service classifications: strength,

OIL IS LIFTED to a NEW LIFE ON WINGS OF AXELSON CAGES

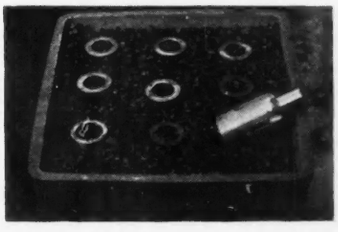
1. Axelson Heavy Duty Cages are formed from bar stock after which milled areas between the wings are produced on duplex milling machines.

Only a part of a pump, but note the care given to it in each of the thirtee operations illustrated, out of a total of fifty required. Dozens of other parts ar needed to complete the pump, and each part requires many honest and unhurrie operations—hundreds in the finished unit.

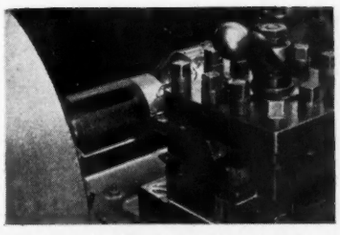
Equipped with the finest tools and machinery, Axelson factories are keyed t precision production. Here a thousandth of an inch is a big dimension. Not onl are important parts checked to close tolerances, but also the tools that mak them are being constantly inspected for accuracy. That's why it is safe an economical to buy Axelson products—anywhere on earth.



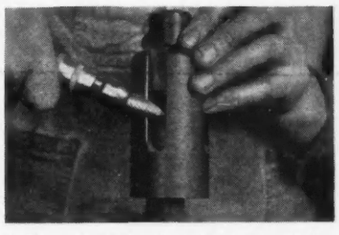
2. Semi-finished bore and measurements of milled areas are checked for accuracy by inspectors.



3. The semi-finished cages are carburized by pack hardening in a solid carbonaceous material.



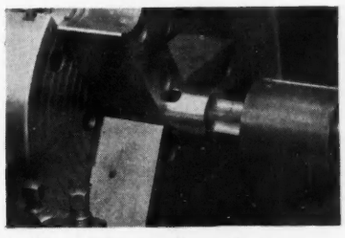
4. After carburizing the outside surface, the main body and the pin of the cage are turned to remove the carburized surface.



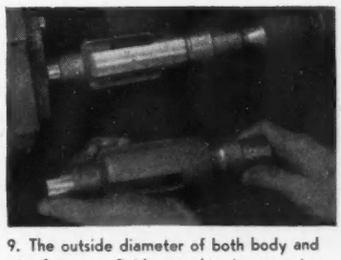
5. The carburized surface for the threaded portion on the inside is removed by boring. Burrs are removed with rotary file.

6. At this point of processing, cages are heated in an electric furnace to proper temperature, and quenched in oil.

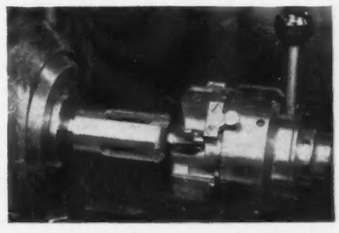
7. After hardening by quenching, the cages are drawn in a Homo electric furnace and checked for proper Rockwell hardness.



8. Cage threads to API specifications are tapped in lower end of cage after cage has been finish reamed to size.



9. The outside diameter of both body and pin of cage are finish ground to size on center and checked for proper tolerances.



10. API specification sucker rod pin threads are produced on cage pin and gaged with both "Go" and "No Go" ring gages.

11. Inside diameter of wings is ground permit diametral clearance of .040" to .0 when using standard API ball.

12. Checking radius of pin collar with precision radius gage is included as one of the many final inspections.

13. Cages are stamped, washed, oiled then placed on steel shelving ready for sembling in pumps or shipment as spar

THERE IS NO ECONOMICAL SUBSTITUTE FOR QUALITY

AXELSON

DEEP WELL PLUNGER PUMPS
SUCKER RODS

Axelson Manufacturing Company, P. O. Box 98, Vernon Station, Los Angeles • St. Louis • 50 Church Street, New York • Tulsa

Mid-Continent and Eastern Distributor: Frick-Reid Supply Corporation • *Rocky Mountain Distributor:* Great Northern Tool & Supply Company.

FIGURE 1

FIGURE 2

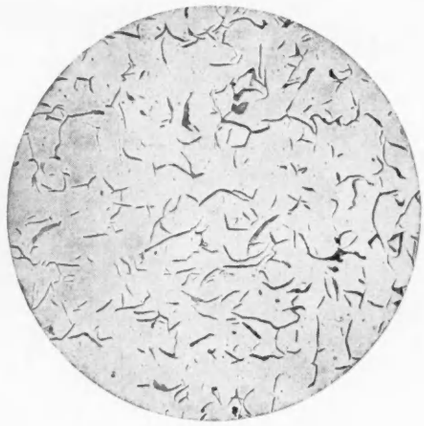


FIGURE 3

hard and severe wear, repeated stresses, pressure, corrosion, heat resistance, density and machinability, abrasion and general service.

Acmeloy metal actually is a group of metals from which a number of engineering specifications can be selected, depending upon the particular service application involved. To satisfy numerous engineering requirements, the composition of Acmeloy can be varied over a wide range, it is stated, though the chemical constituents generally fall within the following limits: Total carbon 2.75 to 3.35 percent; Silicon 1.00 to 2.00; Manganese .65 to 1.75 percent; Sulphur less than .15 percent; and Phosphorous less than .20 percent.

The flexible composition of "Acmeloy Metal" can be adapted to a substantial range of physical properties and, in this manner, a suitable metal specification can be designed to meet a specific engineering requirement such as strength, toughness, hardness, machinability, resistance to heat, corrosion and abrasion, damping capacity and endurance limit. The following table will serve to illustrate the range of some of the physical properties:

Tensile Strength (as cast)	30,000 to	60,000	lbs. per sq. in.
Tensile Strength (heat treated)	75,000 to	85,000	lbs. per sq. in.
Compression Strength (as cast)	125,000 to	175,000	lbs. per sq. in.
Transverse Strength (1.2" x 18" centers)	3,000 to	4,250	lbs.
Deflection Strength (1.2" x 18" centers)	.30 to	.50	inches
Mod. of Elasticity (¼ load)	15,000,000 to	29,000,000	
Endurance Limit	15,000 to	28,000	lbs. per sq. in.
Brinell (as cast)	175 to	255	
Brinell (hardened)	400 to	600	Depending upon Section
Brinell (hardened and drawn)	275 to	325	

Fundamentally Acmeloy metal, like carbon steel, is an alloy of iron and carbon though it contains the additional elements of Silicon and Manganese. Under the microscope its Pearlite structure, at 2000 diameters (Figure 1), compares with that of .85 percent carbon tool steel (Figure 2) at the same magnification with the exception that the free or excess carbon appears in the form of thin graphite particles as shown in Figure 3 at 100 diameters.

Although Acmeloy metal contains the same chemical elements, in different proportions, as ordinary cast iron it differs from this hybrid material in texture, physical properties and structure. The Matrix structure of Acmeloy is homogeneous and consists of fine Pearlite (Figure 1) with uniformly disseminated tiny graphite pencils (Figure 3).

The composition of Acmeloy metal is adjusted to obtain control over the total carbon while it is in the molten state, and in addition to regulate the quantity and structural form of graphite which is precipitated on cooling. The predetermined physical properties and structure of Acmeloy metal are accurately controlled through molten metal processing and a balanced relation effected between the composition of the iron and the governing section of the castings. So produced, Acmeloy is said to be free from hard spots, white edges and corners as well as spongy areas and cavities, and exhibits uniform hardness throughout all metal sections regardless of their thickness. Figure 4 depicts the homogeneous texture of the grain across the face of a fracture section taken through the center of a 5" x 5" x 12" billet. The uniformity of hardness, on the opposite face of this billet, is depicted by the Brinell readings across the plaque shown in Figure 5. The uniformity which exists in a varying section of Acmeloy metal is shown in Figure 6, which depicts the Brinell hardness values taken through the center of a 5-inch thick step test billet.

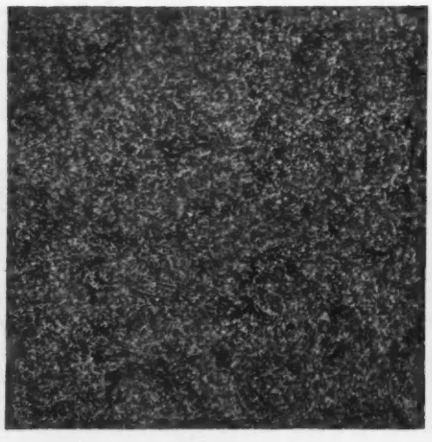


FIGURE 4

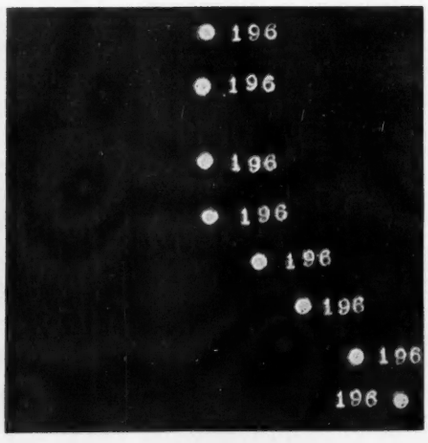


FIGURE 5

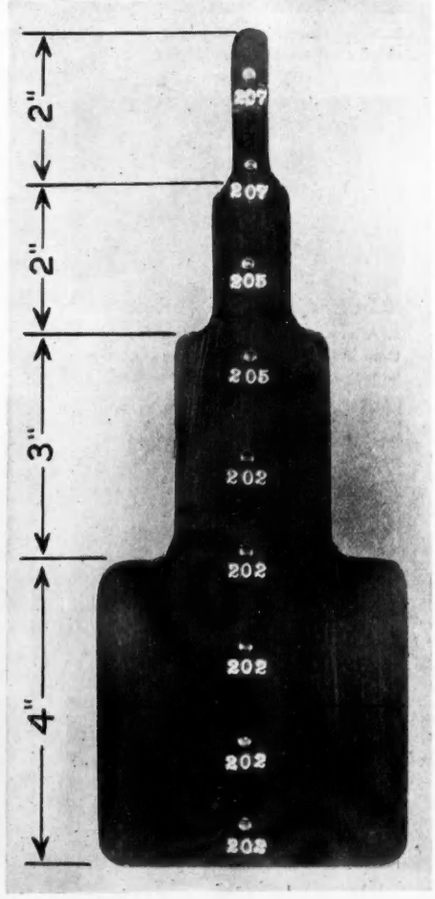


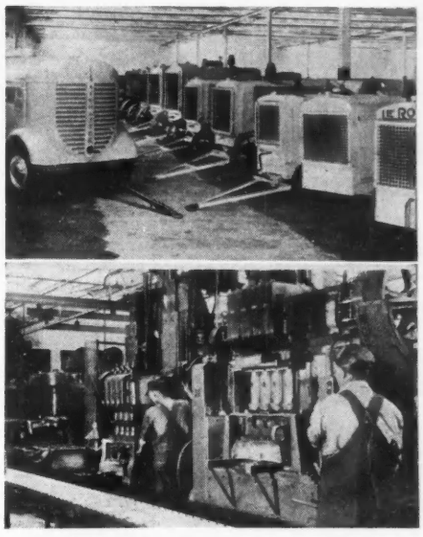
FIGURE 6

This Week with the Industry's EQUIPMENT SUPPLIERS

Le Roi Company Adds Floor Space to Plant

Le Roi Company recently added 25,000 square feet of floor space to its Milwaukee plant. The addition provides space for a new production machine line to handle certain sizes of cylinder blocks and cylinder heads. Modern high-speed machine tools equipped with specially designed jigs and fixtures produce, in large volume, the finest precision work. A conveyor system serves this machine line, reducing handling to a minimum.

Also contained in the addition are a display room, a new assembly line and additional storage space for the company's line of air compressors.



Portion of air compressor storage and section of machine line in new Le Roi factory addition.

Stanley Electric Tool Adds New Distributor

Stanley Electric Tool Division, New Britain, Connecticut, recently announced that Oliver H. Van Horn Company, New Orleans, with branches at Houston, Shreveport and Baton Rouge, has added the complete line of Stanley electric tools to its stock of supplies and equipment for the industrial and automotive trade.

Lincoln Electric Appoints Chapple Manager of Australian Branch

The Lincoln Electric Company, Cleveland, Ohio, announces appointment of J. M. Chapple as managing director of its new manufacturing subsidiary recently established at Alexandria, (Sydney) Australia. A factory building has been purchased which will manufacture arc welding machines, electrodes and accessories. Chapple will be in charge of manufacturing, sales and advertising of the new company.

J. M. CHAPPLE
Head of Lincoln Electric Company (Australia)

Although a newcomer to the company, Chapple is a veteran in the welding industry, particularly abroad. For 13 years he has been associated with Armco International Corporation, most of that time in foreign service. As welding development engineer, he installed equipment and developed the sales organization of the joint Armco International Corporation-Lincoln Electric arc welding electrode factory in Buenos Aires, Argentina.

Lucey Products Appointed Distributor for Gilmer

L. H. Gilmer Company, Philadelphia, has announced the appointment of Lucey Products Corporation, Tulsa, as distributors of the company's V-belt and V-sheaves.

Besides prompt service from headquarters at Tulsa, the Lucey Corporation carries stocks at Oklahoma City and Stonewall, Oklahoma; Hutchinson, Kansas; Odessa and Wichita Falls, Texas.

Westinghouse to Spend $12,000,000 on Expansion

Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania, recently announced that the company will spend approximately $12,000,000 on new buildings, new machinery and equipment, and other improvements and repairs in the various district offices, radio stations, and plants, of which there are 22.

That sum, approximately the same as that appropriated for similar projects in 1937, is being spent because of faith that a revival of business is coming, "plus our natural desire to do our part in effecting a return of pros-

SIMPLEX JACKS

Emergency Jacks
Riggers' Jacks
Pull Rod Jacks
and Jacks for every
Oil Field Need
No. 310
STOCKED BY LEADING SUPPLY HOUSES
TEMPLETON, KENLY & CO., CHICAGO

Standco
NO-SMOKE
STANDCO BRAKE LINING
Nothing novel—no bunk—but it gets the job done without scoring brake rims. See page 1940, Composite Catalog.
Standard Brake Lining Co.

YOU DRILL . . . WE'LL FURNISH the MACHINERY and DRILL PIPE . . .
All thoroughly reconditioned in our own shop . . . for SALE or RENTALS. Call or wire for prices.
NEAL LUCEY COMPANY
2107 QUITMAN ST.-PRESTON 9614
HOUSTON, TEXAS

TAGS
for your every need
A complete line of shipping and merchandising tag . . . Including those for your special requirements . . . Prompt personal service that saves you time and money.
ALL KINDS OF BUSINESS ENVELOPES . . . We manufacture and print envelopes of every description—built to give maximum utility, security and economy.
GULF
ENVELOPE CO.
617 Brooks St. P.O. Box 164
Phone Fairfax 4171

perity and employment," A. W. Robertson, chairman of the board, said.

He pointed out that, although the amounts being spent this year and last were virtually identical, there was an important difference: the 1937 outlay was made to keep up with mounting demands on the company for increased production, whereas this year's appropriations are made principally on faith that business conditions will improve, and on the company's desire to be ready for increased production when it comes.

"The stimulus of these expenditures will be felt directly in scores of communities and states," Robertson said. "This program extends all the way from Boston, where a warehouse and service building will be erected, to Emeryville, California, which will get two new buildings, equipment and repairs.

ROY N. BEAN
Formerly with Layne & Bowler Company, has become associated with the sales department of Cameron Iron Works, Inc., in the capacity of sales engineer.

Murphy Diesel Appoints W. C. Morgan District Manager

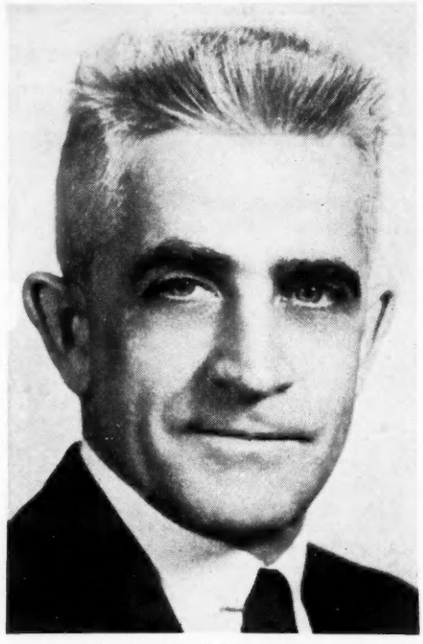
Murphy Diesel Company, Chicago, recently announced appointment of W. C. Morgan as district sales manager in the Southwest territory. He will be located at Tulsa.

Al Chamberlain Elected President of Tulsa Lions

Al G. Chamberlain, who recently was named assistant secretary of Frick-Reid Supply Corporation, was elected president of the Tulsa Lions Club May 18, and was inducted into office May 25.

Chamberlain has been associated closely with the oil and equipment supply business for many years, coming to Tulsa in 1915 on a leave of absence from Commonwealth-Edison Company, Chicago, where he was employed as a work dispatcher in the overhead division of the street department.

He started to work in the purchasing department for Frick-Reid Supply Corporation as a stenographer, later being made assistant purchasing agent, and was one of the early group purchasing men making up the Purchasing Agents Association of Tulsa, having joined on April 27, 1919. For the last several years he has handled the concern's advertising matters and other activities incidental to a large organization.



A. G. CHAMBERLAIN
Elected president, Tulsa Lions Club.

BRIGHT
as a

ANY DECORATOR will agree that a bright, colorful room interior brings cheer to the disposition. When the big, new rooms in **Hotel McAlpin** were redecorated with new furniture and fixtures, new carpets and draperies, experts planned color schemes of charm and restfulness. That's why these beautiful rooms are so bright and cheery, so modern in decoration. These rooms are now available to **McAlpin** guests . . . at no increase in rates. When may we expect YOU?

JOHN J. WOELFLE, Mgr.

★ SILVER DOLLAR

HOTEL McALPIN
"The Center of Convenience"
Broadway at 34th St.
NEW YORK

ROOMS with BATH from
$2.50 SINGLE **$4.00** DOUBLE **$4.50** TWIN BEDDED

IT'S LUDLOW all the way

There's a Ludlow valve for every purpose in the oil and gas field — for high or low pressure, for hydraulic, oil, gas or steam lines. Every valve is built to last for many years, with minimum wear and repair. Ludlow is dependable, economical. Write for complete catalog or send specifications for estimate.

The LUDLOW VALVE MFG. CO.
TROY, NEW YORK

419 WEST ALABAMA, HOUSTON, TEXAS
MID-CONTINENT SUPPLY CO., HOUSTON, TEXAS

Squeaks from the Bull Wheel

Easy

"Did you find it difficult to find a name for your little son?"

"No! Certainly not, for we have only one masculine relative in the family that has a fortune!"

Suspicious

"Professor, would you come down to my fraternity house for dinner tonight?"

"Now, now, don't worry, I'll pass you in the course without your poisoning me."

Dirty

"How will those boys ever get clean?"

"Why, isn't there a scrub team?"

Definitely

"Hello, what are you doing?"

"Getting ready for church."

"Sorry, wrong number."

Technique

"Could I see the man who was arrested for robbing our house last night?"

"This is very irregular. Why do you want to see him?"

"I don't mind telling you. I only want to ask him how he got in the house without awakening my wife."

Floor Show

"Any picture show in town, my friend?"

"Nope, nary a one, stranger," was the answer.

"Any pool room or bowling alley?"

"None of them either," came the reply.

"What form of amusement have you here?" asked the salesman.

"Wall, come on down to the drug store. Thar's a freshman home from the university."

Winner

I'll give a dollar to the laziest man here."

"Roll me over, buddy, and stick it in my back pocket."

Truth in Advertising

Item on restaurant menu:

BARELY SOUP.

Daily

At the conclusion of the Sunday morning service the affable visiting clergyman shook hands with a stranger and said: "Are you a regular communicant?"

"Oh, yes," answered the young man. "I take the 8:35 every morning into town."

Haitches

"What a large family you have, Mrs. Jones," said an American woman to an English lady.

"Yes'm, and the funniest thing is that all the names begin with a haitch. There's Orace, Erbert, Enry, Ugh, Ubert, Arold, Arriet, and Etty—all except the last one, and we had her named Halice."

Who Told You That?

"It was your fault," he said to the victim severely. "I've been driving a car for 15 years, and am a most experienced driver."

"Well I've been walking for over 40 years," retorted the pedestrian. "So I'm hardly a beginner."

A Newspaper Reader

"Say, Dad, have you any work you'd like me to do?"

"Why—no—but—er—."

"Then how about putting me on relief?"

It Might Be So

Madam, you pay only a small down payment and then you pay no more for three months.

I'll wager that snoopy Mrs. Quiss told you all about us.

Very Appropriate

A minister in the course of a sermon said: "If I had anything to do with whisky, beer, rum or any intoxicating drinks, I should have them all thrown into the river."

At the end of the sermon he gave out the hymn, "Shall we gather at the river?"

An Antique

"What an adorable old table. Colonial, I suppose. Possibly a Washington relic or—"

"To be exact, madam, that is Custer's Last Stand."

Soon

"I am glad," said a father-in-law to his newly acquired son, "that you have been able to arrange your home without asking me for help."

"Yes! dear father, the first installment is not due for one month!"

Oh, Well, It Might Be So

He pulled into the garage with a horrible grinding of brakes and asked to be shown some second-hand cars.

"Got tired of the old bus, I suppose?" the salesman inquired.

"No, not quite," replied the motorist, "but every time I park this thing, up comes a policeman to make sure I've reported the accident."

10 Commandments

The 10 to 12 year old children of a certain congested neighborhood were invited by their teacher to write their own Ten Commandments. Here are some of them:

1. Try hard to keep your temper when you are fighting with someone smaller and don't fight bigger ones.

2. Never beat your wife when you are first married. Keep your temper until you can't stand it.

3. You shalt not play crap.

4. You must always be obigent, clean your neck, stand ereck, and swallow good fresh air.

5. Never try to steal a dog's bone, or you'll have no pants.

TOUGH!

Cold Chisel No. 99

Center Punch No. 638

Cold chisels and punches must be *tough*.. and the toughest of them all are Stanley Chrome Vanadium Steel Chisels and Punches.

. Made of electric furnace chrome-vanadium steel, hardened and tempered to hold a lasting cutting edge, they will stand the hardest use yet are *soft enough to resharpen with a file.* This eliminates drawing the temper.

But why limit it to cold chisels and punches? Stanley offers a complete line of heavy duty hand tools. Your distributor can supply them.

STANLEY TOOLS

NEW BRITAIN, CONN.

STANLEY and STANLEY-ATHA TOOLS

Nail Hammers
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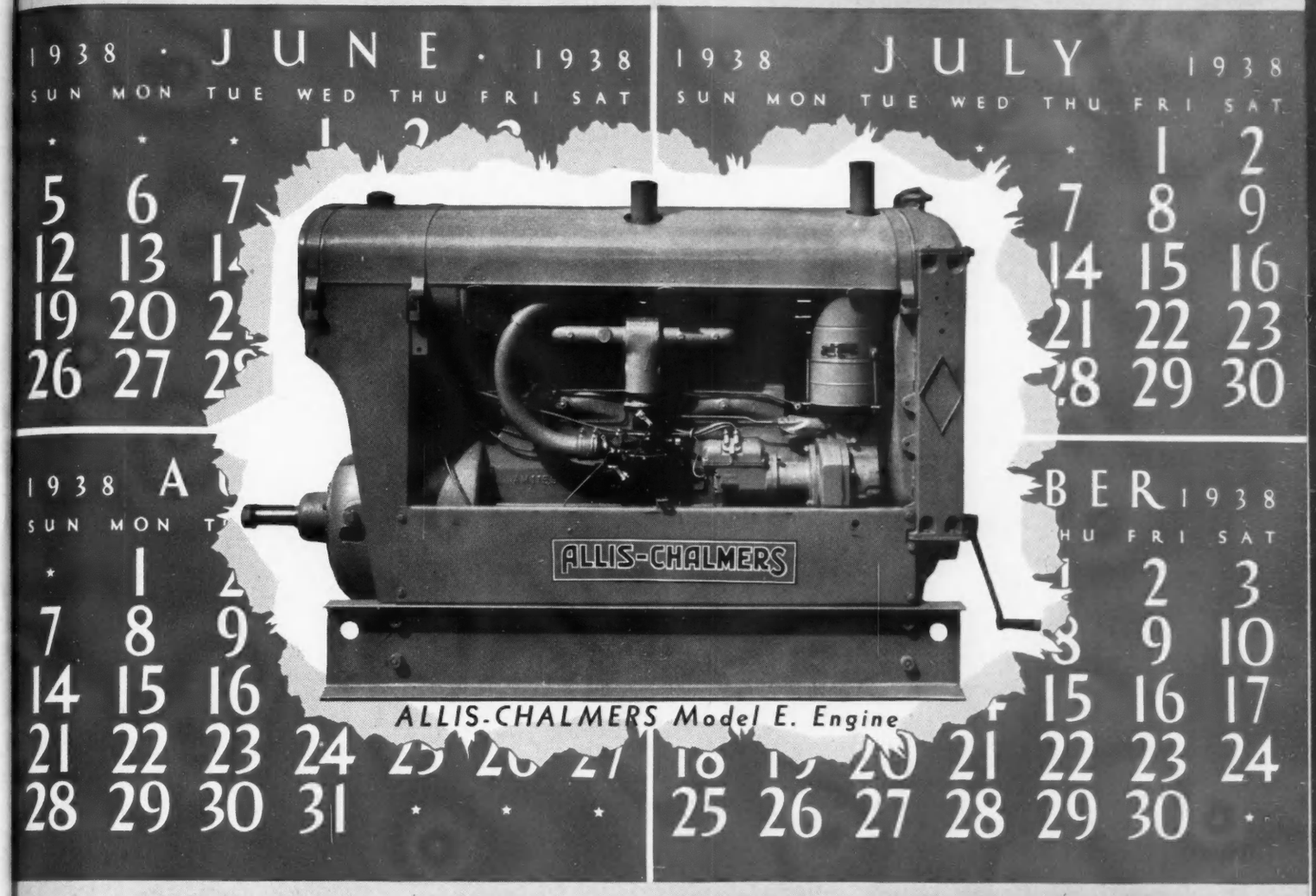
Here's HOT weather



ALLIS-CHALMERS Model E. Engine

Allis-Chalmers Engines are built to withstand excessive heat!

Designed by engineers who know the problems of stationary engine operation under all conditions, and who know that engine failures on pumping wells are costly.

Allis-Chalmers heavy duty, tractor type, slow speed engines will deliver required performance continuously even in the hottest weather, because large water capacity of engine block and high turbulence water pump assure uniform operating temperatures throughout the entire engine block, thus eliminating necessity of oversize radiators and the resulting uneven heat temperatures common to higher speed, lighter type engines. Water enters and cools cylinder head and combustion chambers first. Exhaust valves are almost completely surrounded by water and the entire cylinder wall, from top to bottom, is completely surrounded by water.

Dust and dirt don't bother these engines because they are sealed at every point; even the air for combustion is washed in oil before going to the cylinders. Lubricating oil is delivered under pressure to every moving part. Allis-Chalmers Engines are available in four sizes: Model L—Torque 550 ft. lbs., Model E—Torque 375 ft. lbs., Model U—Torque 200 ft. lbs., Model W—Torque 128 ft. lbs.

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The Old Silversmith ~
Back in earlier centuries, working with silver was more than a profession, more than a trade — it was the art of skilled Craftsmanship

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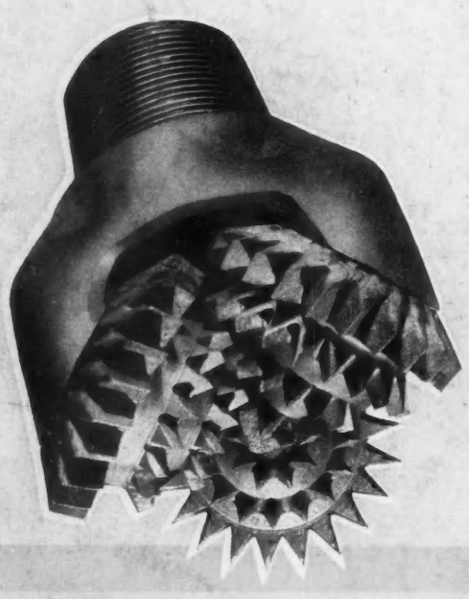

From their inception to the present day—Hughes Rock Bits have represented more than just a "workable tool"—they have had built into them an outstanding craftsmanship that combines the personal, mechanical and material elements to an unusual degree.

HUGHES works with fine steel—not silver—but the results furnish the standard by which drilling performances are measured.

HUGHES TOOL CO., HOUSTON, TEXAS, U. S. A.

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To THE OIL WEEKLY of
March 28, 1938

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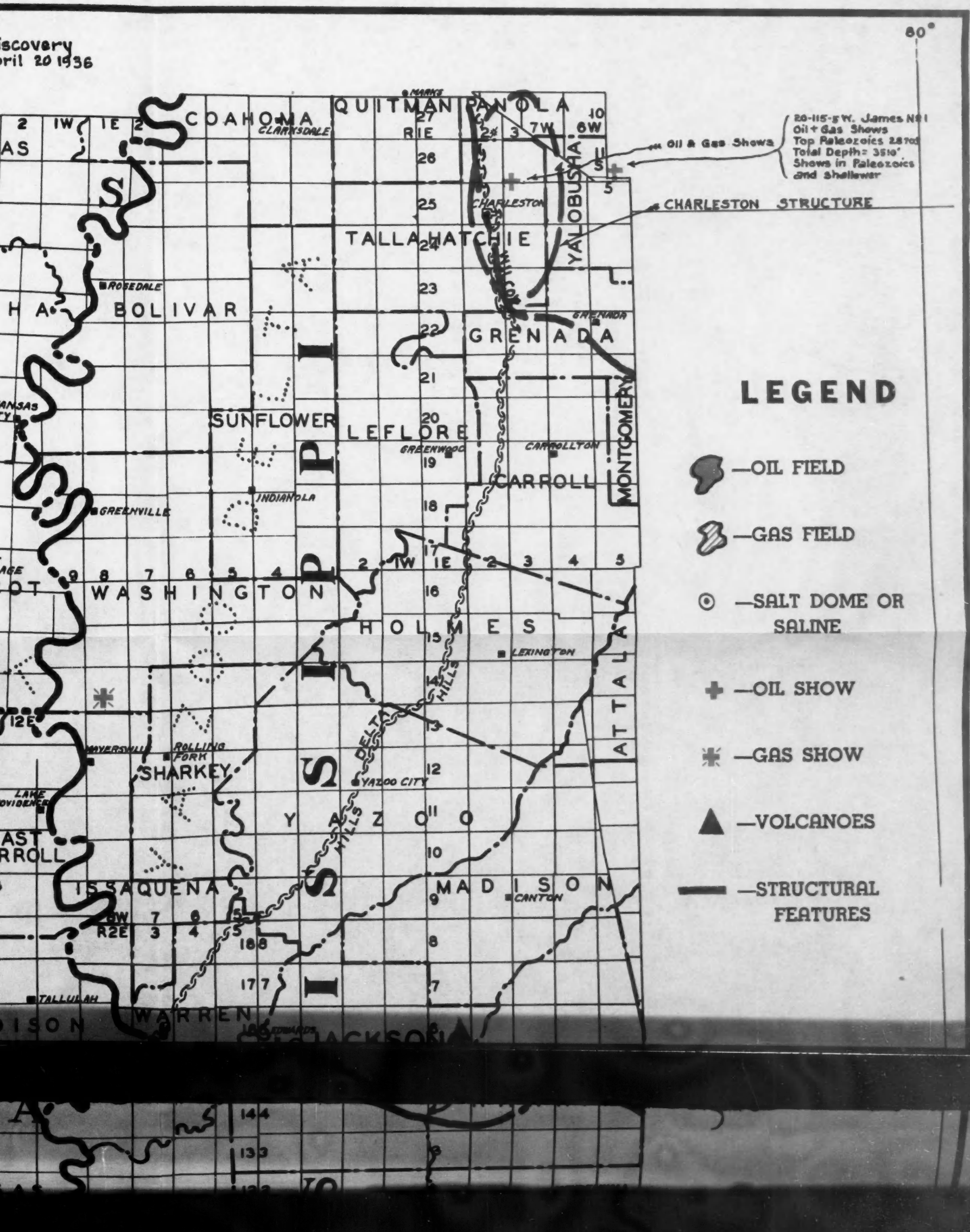

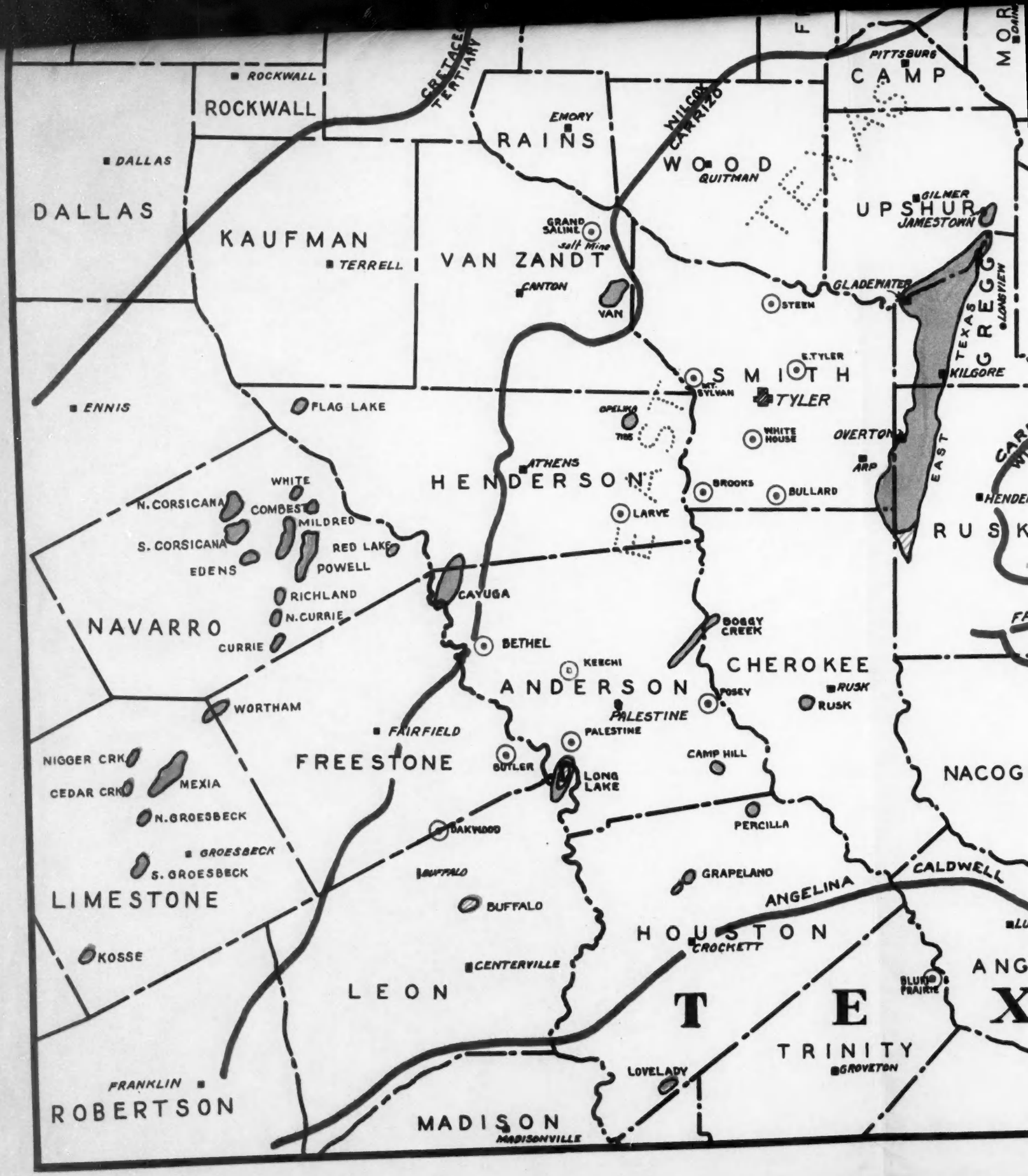
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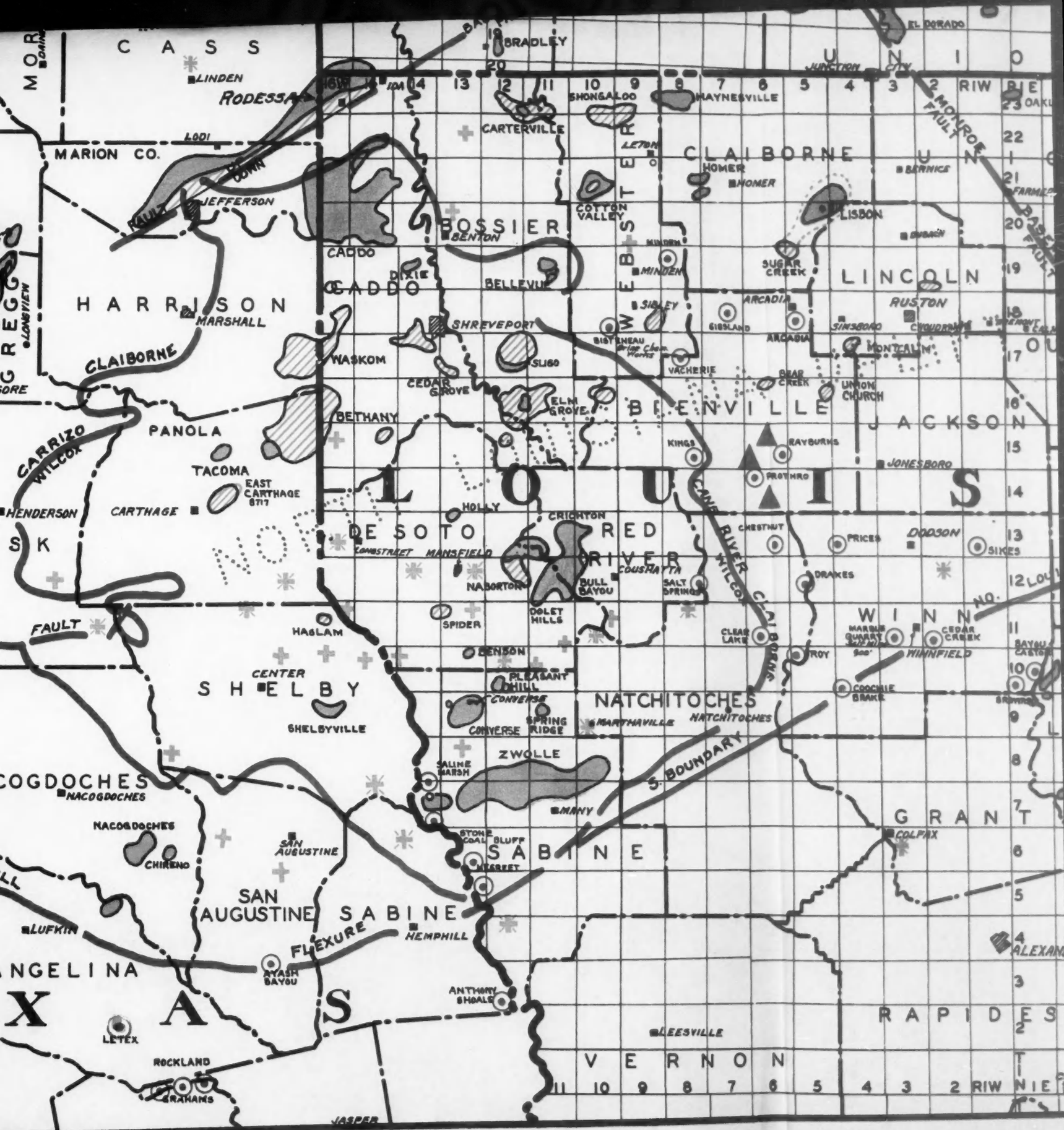
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